THE DEVELOPMENT OF EDUCATIONAL TECHNOLOGY AT AHMADU BELLO UNIVERSITY ZARIA

A Dissertation submitted in partial fulfilment of the Master of Education (M.Ed.) degree in the Department of Education, University College, University of Wales, Cardiff.

by

SUNDAY OWUNA

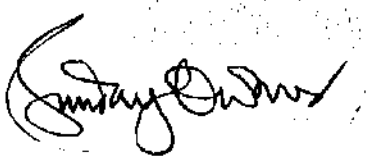
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DEDICATION

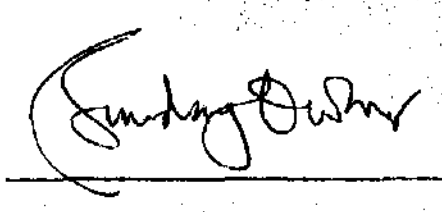
In full appreciation of the inevitable sacrifices, they made in the process of this inquiry, this dissertation is dedicated to my wife HELEN and our son ADA OWUNA.

DECLARATION

I hereby declare that this dissertation has not been accepted in substance for any other degree and is not being submitted concurrently for any other degree.

Signed 

I certify that this thesis is entirely the result of my own independent investigation. The various sources to which the author is indepted are clearly indicated in references and in the bibliography.

Signed 

Signature of Supervisor

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The Development of Educational Technology at Ahmadu Bello University Zaria.

ABSTRACT

The first concern of this study is to examine relevant literature so as to arrive at an operational definition of Educational Technology. This is followed by an examination of its growth. The role and growth pattern of educational technology thus defined, the study then proceeds to consider such questions as: what is the role of central services units in institutions of Higher Education in Britain and what are the needs of Ahmadu Bello University? This then leads on to a consideration of the terms of reference for such centres, their committee structures, facilities, finance and administration; and the relationship of such centres to both academic and service departments.

In chapter two, the development of educational technology in British Universities is considered in general and in relation to the defiinition already established so as to help better in mapping out the priorities in development which if applied to Ahmadu Bello University (ABU)/ would help meet her needs. In this) such questions as what areas and aspects of educational technology should be covered and in what order - hardware, software or teaching techniques. This is followed by case studies of two specific developments in Wales - one a 'Medium level' Centre in the University College Cardiff, the other, an area resource Centre geared to meet school needs.

Chapter three is concerned with the growth of educational technology in Nigerian Universities) the general level of development is then compared with the situation in Britain and the lessons for the Nigerian activity in developing this area of instruction and service are identified.

Chapter four deals with the development of Ahmadu Bello University with special consideration of its educational technology services as well as student and staff growth. The report of a university consultant and the results of a questionnaire on the type of Educational Technology Centre that staff in Ahmadu Bello University would like to have are also discussed.

The final chapter sums up briefly the points on the development of Educational Technology and concludes with a description of a model for Ahmadu Bello University.

ACKNOWLEDGEMENTS

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CHAPTER I

THE MEANING OF EDUCATIONAL TECHNOLOGY

INTRODUCTION

In reflecting on the purpose of university education in Nigeria Biobaku said;

> "... a developing country must modernize its economy in order to ensure growth and make its independence a reality. The tasks are formidable enough: to overcome poverty, eliminate ignorance and combat disease. To do this one must develop the country's resources, educate its people on a massive scale and develop both curative medicine and preventive measures" (1*).

Audu considers the teaching functions of the University as:

> "... The most obvious university function and the one around which the other elements of university organization and work revolve. University education is where the highest skills of a community are imparted ... But as technology developed people began to see the role that universities could play in organizing the communication of knowledge. The semi-moribund institutions that universities were, were galvanised into life by new men and new learning" (2*).

If the role of university education is considered as an integral part of national socio-economic structure with teaching functions forming a focal point, then the organization of 'communication of knowledge' or Educational Technology, should be fundamental to such a system. What is needed then is to establish a working definition of Educational Technology.

1*. Biobaku, S. O: 'The Purpose of University Education, 'A Philosophy For Nigerian Education - Proceedings of the Nigerian National Curriculum Conference; Ibadan, 1969 Heinemann, p.69.

2*. Audu Ishaya, S; ibid, p.63.

There is much evidence today that people express considerable concern about the value and importance of higher education and the admission problems posed at that level of educational activity in all countries - Britain, U.S.A. and Nigeria alike. In Britain, the Robbins Report stated:

> "... courses of higher education should be available for all who are qualified by ability and attainment to pursue them and will do so."

This is one concept of higher education that has been accepted in many countries with the British type of educational system and is based on equal opportunity. In complying with the principle of equal opportunity for all, Nigeria in September 1976 launched a Universal Free Primary Education (UPE) programme which aims at making education at that level compulsory by 1980. Further in his convocation address in 1976 at the University of Ibadan, the Head of State of Nigeria statedthat free tuition and boarding would be provided at technical, teacher training, post secondary and university levels from the academic session beginning in 1977-78. Such provision will definitely accelerate admissions and although the problem of size and quality is now new in the industrialised nations; especially as it relates to the development of Educational Technology in higher institutions of learning, it does pose new problems for Nigeria and in the solution of these educational technology has a key role to play.

DEFINITION OF TERMS

To the question; what is educational technology? We can add; Is it the application and use of technology to education; is it simply the employment of audio-visual aids and other media or is there in fact a technology of education?

Educational technology is an emerging concept and currently and there are conflicting views as to its nature. Some see it no more than the provision and use of audio-visual aids while others consider it as a systematic plan in the whole process of education and training which combines materials; human and other physical resources in achieving educational goals. Today, in some areas, educational technology is considered as a process for solving instructional problems rather than a means. Thus whilst the media specialist aims at improving teaching by employing different materials and presentation techniques, communication specialists concentrate on the relationship between the presentation of teaching materials and learning process, both, each in their own ways, attempting to make learning more effective in terms of context and costs.

In defining the term, Romiszowski[1*] traced its origin to the sub-title of Thomas Gilbert's book, 'Mathetics - the technology of education'; written in 1961. The book presented a sequence of instructional designs based on the works of contemporary behavioural psychologists such as Skinner, Seymour, Pressey and Bloom from

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1* Romiszowski, A. J; The Selection and Use of Instructional Media, Kegan Paul, 1974, pp.9-55.

whom other concepts relating to educational technology have come. Gilbert defined his 'Mathetics' as:

> "The reconstruction of the reinforcement theory to the analysis and construction of those complex behaviour repertoires usually known as 'Subject Mastery', 'Knowledge' and 'Skills'."

The Skinnerian school believes that complex behaviours are learned by building up chains of simple stimulus - responses (S-R). Professor B. F. Skinner best known for his experiments with animals especially pigeons and from which operant conditioning theory developed as a system of 'shaping' correct responses in small steps. Programmed learning was the first application of this in human learning situations. Skinner's type of programmes were of the linear format type from which were later developed more sophisticated techniques such as Lumsdaine's branching programmes.

Many other learning models have also contributed to this area of learning. For example, Gagne's model listed eight different learning scales in a hierarchical structure - varying from signal learning to problem solving, the latter being considered as a high-order learning[1*].

To Seymour[3] all learning tasks must be thoroughly analysed into the skills and knowledge that help their achievement; this then incorporates the time taken and the sensory responses to

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1*. Ibid, pp.30-37.

2. Seymour, W. D: Industrial Training for Manual Operations; Pitman, London 1954.

complete the tasks. Although both Skinner and Seymour approached programmed learning from entirely different points of view, the end results have been similar - that is, the importance of cognitive and psycamotor learning in the context of training. Benjamin Bloom in his book 'The Taxonomy of Educational Objectives' classified learning objectives into three domains - Cognitive, Psychomotive and Affective which parallel the views already expressed on the subject - knowledge, skills and attitudes. These main categories are further classified into smaller units so that, for example, under the cognitive domain six classes have been identified as: knowledge, comprehension, application, analysis, synthesis and evaluation of their hierarchical order[1]. These then form the main categories of cognitive educational objectives.

Davies discusses three of the associated terms most used in educational technology - 'hardware' and 'software' and the 'systems approach'. The hardware approach considers educational technology as a direct application of the physical sciences to education and learning especially tools like Audio-Visual (AV) Aids. This is usually referred to as the traditional approach and has a rather limited scope since most equipment is produced for other markets outside education except in the case of teaching machines. The main products of this mechanised approach are projectors, tape recorders, cameras, video recorders and television units which are intended to facilitate mass-communication rather than of

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1. Bloom, Benjamin, S. et al; Taxonomy of Educational Objectives, Handbook 12, Longmans 1964.

initiating new knowledge. In terms of development of educational technology this is considered as the first stage with production and services being dictated by available hardware.

The software approach is closely associated with programmed learning whose aim as we have already seen, deals with shaping behaviour consciously by applying learning theories such reinforcement and the problem of individual differences and motivational forces. This second stage, in terms of the development of educational technology, has followed the first and can only be effected after the necessary hardware has been established; this production stage once started has to be kept going so that it leads to the next stage - problem solving.

'Systems approach' or problem-solving is the most recent of the three terms associated with educational technology and training. It is not new to organizations or the military and industry. By definition, it is the application of knowledge in a systematic and scientific way to achieve a particular purpose. In this discussion knowledge of hardware and software has been applied and at different stages along the line to form the technology of education today. If educational technology is considered in these terms then knowledge relating to a systematic design of education must incorporate appropriate findings from psychology, sociology, comparative education and history of education, as well as the vocabulary of economics, management sciences and physical

sciences. One effect of this is the use of such terms as 'cost benefits' and 'teacher manager' in education.

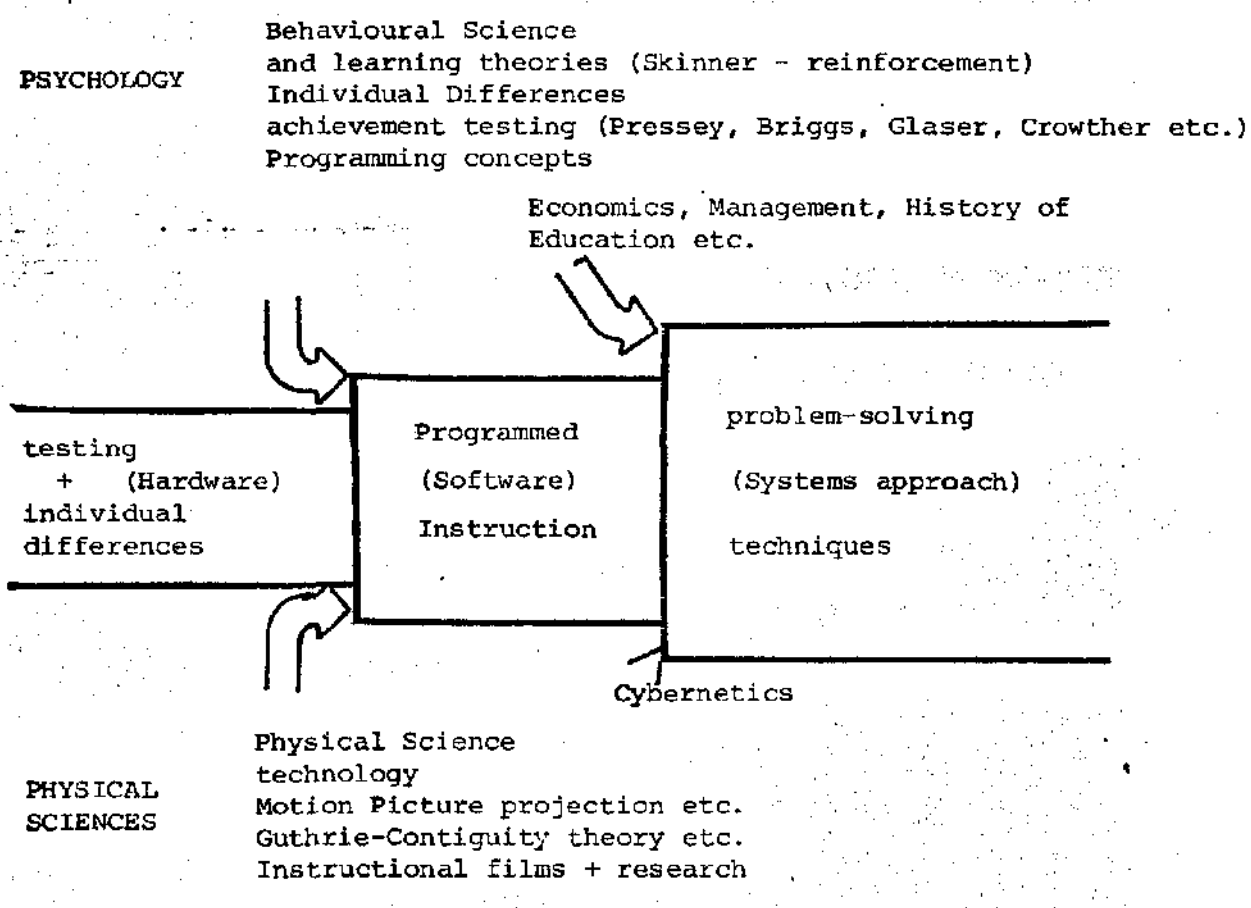


Fig. 1: Agents of Influence on Educational Technology.

The three main terms so far mentioned are shown in the above diagram and they are associated with three stages of development. The stages of development can be summarised as:

(a) The hardware stage - the necessary equipment is established and the necessary services that make it operational are provided.

(b) The software stage - the aim here is to help people to obtain suitable teaching programmes.

(c) Use and application of a systems approach in solving particular instructional problems.

This pattern of development will be applied to the examination of specific educational technology establishments later in this study.

In considering education, Professor Finn once remarked that it (education) would only be considered developed by up-dating it with the developments in technology used in its surrounding advanced cultures - the military, industry and business world being examples of such cultures. The process of modernizing education then would include the selection of knowledge from all relevant fields and learning systems which are then adapted to cope with different problems of learning including that of individual differences.

EDUCATIONAL TECHNOLOGY IN DEVELOPING COUNTRIES.

Currently accepted by educational technology specialists are the following three main vital elements, for effective instruction and learning; the answer from the student, the demands of the answer and the methods, both human and material resources employed.

Further in this context the teacher has to consider his student - objectives as an important element in the learning. Thus,instead of stating objectives in words likely to give double meanings such as, "I want the student to know", "to understand", "really understand", "appreciate", "enjoy", "believe", he must think of them as being what should the student be able to write, "identify", "solve", "construct", "contrast" or "smile" at.

Currently in developing countries too, much importance is attached to passing examinations so that terms such as 'passed' or 'failed', 'below average', 'above average', 'certificated' and 'uncertificated' have strong socio-economic success connotations. Instead of such normative evaluation, educational technologists use criterion evaluation, where the learner is rated according to his own performance and achievement - What is he able to do within the time limit that he could not perform before the instruction; so that he is evaluated against himself and his records not against the possession and no. of certificates awarded irrespective of their functional value. One result of this is that in many developing countries educational technology has not been fully appreciated and is still considered as 'audio-visual aids' as was the case in the industrial world some time ago. Further as the introduction of hardware on a large scale is too expensive for poorer countries, its contribution is largely ignored not only at the initial level, but also at the software and systems approach level.

However, its greatest value could well be at this last level with the clear definition of objectives leading to the most efficient use of equipment and manpower helping to make the best use of scarce resources. Thus one might say that the emphasis needs to be rather on the systems approach than on the acquisition of hardware and software for the prestige reasons.

CHAPTER 2

THE DEVELOPMENT OF EDUCATIONAL TECHNOLOGY IN BRITISH UNIVERSITIES

INTRODUCTION

In the growth of Educational Technology in British Universities the same pattern of the initial introduction of Audio-Visual Aid hardware, followed by a growing interest in more effective programmes culminating in a recognition and increasing use of a "systems approach" to teaching problems can be discerned. In this chapter, there will be a brief examination of the general growth pattern, followed by two short individual studies which have relevance to Ahmadu Bello University - one being the development of the Centre for Educational Technology at University College, Cardiff, the other being that of Clwyd Centre for Educational Technology at Mold which is geared to the provision of services for the North Wales Local Education Authorities.

THE HALE AND BRYNMOR JONES REPORTS

In the United Kingdom the systematic development of University based Educational Technology was triggered off by the University Grants Committee's sponsored Committees whose reports have provided both stimulus and guidelines to current thinking. These were - The Committee on University Teaching Methods (Hale Committee) which reported in 1961 and the Committee on Audio-Visual Aids in Higher Scientific Education (The Brynmor Jones Committee);

the latter also jointly sponsored by the Department of Education and Science and the Scottish Education Department, which reported in 1965.

The 1961 Hale Report made a survey not only of students' learning methods but also of all forms of university instructional methodology including the place of lectures, seminars, tutorials and programmed instruction. It also examined the interaction between teaching and examinations, equipment for teaching and the training of university lecturers.

In their statement, the Committee expressed their disappointment about the lack of analysis of the aims of education in undergraduate courses where most aims were general rather than specific. For example university teachers told the Hale Committee that they aimed at making undergraduates develop "independence of mind". In its summary the Committee, while noting the value of discussion-type periods such as tutorials in helping students to develop mature ways of thinking, felt that these fell far short of the contribution that could be made by programmed learning; for example, tutorials fail to cater for individual differences, encourage good students but discourage and weed out the poor ones. While it recognised that there was only a limited use for programmed instruction in university teaching as being mainly useful for preliminary and introductory courses; it recognised the virtue of

the systematic breakdown process involved in programming, both to the individual learner and to the teacher. It blamed the limited use of programmed instruction, in part to the lack of incentives for authors in contrast with text book writers, but also to the difficulty in changing from such traditional methods of teaching and learning as lectures and books: the complex nature of university courses, and to the conservatism of university teachers. The Report however stimulated discussion and led to the setting up of the Brynmor Jones Committee. As its title "Audio-Visual Aids in Higher Scientific Education" indicates, it was largely concerned with hardware and marks the first stage of development; as it reveals existence of the traditional Audio-Visual Aids approach in teaching at this level. The survey assessed the use and possible development of aids through questionnaires, by oral and written evidence, and by visits to institutions in Britain, Germany and the United States of America. The Report was largely based on informed opinion and highlighted the fact that most aids were used by a few devoted enthusiasts. It observed further that the more conventional aids such as slides, epidiascopes, films and filmstrips, were widely used but even then they were not fully exploited. Worse still, little attention was given to such newer aids as television, overhead projectors, loop projectors, language laboratories and teaching machines due to slower institutional recognition by university and college teachers.

In its conclusions the Committee noted the value of various types of programmed instruction over traditional aids and emphasised the functional values of programmed learning as "... more truly an aid to the student learning than to the teacher teaching"[1]. Compared to audio-visual aids, where the emphasis is on simple oral communication, the modifiable nature of programme formats, the constant exposure to tests and provisions for feed back were considered to be not only more effective stimuli but also as a mode of learning.

Both the Hale and Brynmor Jones Reports emphasised that equipment alone did not constitute educational technology which rather has its base in the behavioural sciences and the study of instructional systems; and they encouraged experiments that began with the expression of teaching aims in behavioural terms which are then evaluated and their effectiveness costed[2]. They warned that opposition from the academicians should not be unexpected at the planning stage unless they were properly consulted and involved.

Both Reports noted that the independent nature of many institutions of higher learning make them vulnerable to the temptation of mistrust both within and between them. Further, they stated that a central organisation concerned with teaching

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1. University Grants Committee, Department of Education and Science, Scottish Education Department; Audio-Visual Aids in Higher Scientific Education, H.M.S.O. London, p.76.
2. Reid, R. L: 'Educational Technology, Background and Need' Media and Methods - Instructional Technology in Higher Education; McGraw Hill 1969, ed. Derick Unwin pp.7-12.

efficiency could be regarded as a threat to the freedom of university academic staff if it became successful.

The two Reports not only considered the problems within institutions but also in reference to the isolation of institutions with regard to the exchange of information on teaching techniques and materials. The Brynmor Jones Committee even went beyond its terms of reference and recommended that a National Centre for Educational Technology be created to act as a co-ordinating, resource and dissemination centre; whilst the discussions growing from the Hale Committee led to the establishment of the Association for Programmed Learning and Educational Technology (A.P.L.E.T.) in 1966. This marked the beginning of the second stage in the development of educational technology at the national level, as at its first meeting emphasis was given to the use of software. The Association because of its wide ranging membership also introduced the universities to progress in other sectors. Thus, examples of the use of programming in the Surrey Secondary Schools Mathematics Programme, used to make good a teaching shortage in this field; in manufacturing industries where it was being used for industrial training and in the Armed Forces, which additionally were also developing simulation games, all helped to widen the range of discussion and fermentation in the University field.

In its implementation of the two Reports, as audio-visual aids are expensive, The U.G.C. decided to choose a limited number of universities (ten) as "High Activity Centres" during the

quinquennium 1967-72. These were provided with special funds, and also given specialized areas for development. York and Essex were allocated the "use of modern media in the teaching of languages and linguistics", Essex "multimedia". In Scotland, Strathclyde and Glasgow "television" others in the same medium being Manchester and U.M.I.S.T. (University of Manchester Institute of Science and Technology). Liverpool and Newcastle were designated for the development of "multi-media, especially programmed learning" and "multi-media" respectively, while Leeds for "television and associated visual techniques"[1].

Others were designated as "Medium" and "Low" Activity Centres and financed accordingly. The need to make the best use of such activity resulted in the Brymor Jones' recommendation for the setting up of a National Council for Educational Technology (N.C.E.T.) in 1972 designed to provide:

(i) Information

(ii) Research

(iii) Consultancy

(iv) Development of methods and equipment

(v) Training courses

The founding of the N.C.E.T. marks the beginning of the third or "systems approach", stage and has led to an increase both

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1. University Grants Committee; University Development Reports on the Quinquenium 1967-72, p.28.

formally and informally to courses for university teachers, to the increased use of distance teaching and examination techniques.

This is an ongoing activity which to a greater or lesser degree is present in all university and Higher Educational Institutions in the United Kingdom.

THE CENTRE FOR EDUCATIONAL TECHNOLOGY, UNIVERSITY COLLEGE, CARDIFF

The purpose of this section is to see how these stages of development have affected the activity in educational technology in one university institution.

University College, Cardiff, established in 1882 as one of the constituent colleges of the University of Wales, is a largely autonomous institution offering a wide range of courses in the Arts, Social Sciences, Applied and Pure Science, Education and Law but not Medicine or Agriculture.

When the Cardiff Centre was established as a "Low Activity Centre" to serve all the constituent colleges of Wales, it was not designated by the U.G.C. to participate actively in making professional teaching programmes on television or A-V aids or the intensive development of closed-circuit television. It was generally expected to provide for existing and develop new audio-visual services and to develop limited educational television facilities.

Like the general pattern in the United Kingdom, it has equally displayed growth and now operates, in its limited sphere at all three stages with a growing emphasis on the 'systems approach' in the last few years.

During the first phase, the centre came under the direct control of the Department of Education and operated with emphasis in the early years on the provision and use of the range of equipment permitted.

The Centre was established in 1968. Historically it grew out of an earlier Communications Studies Unit and the University Grants Committee grant for the quinquennium 1967-72 to set up a "Low activity" audio-visual centre at the University College to serve the University of Wales. Apart from a subvention of £3,000 per annum which was allocated to University College, Swansea, the remainder of the grant which consisted of an initial sum for capital of £12,500 and a recurrent grant rising by stages from £8,000 in 1968 to £26,000 in 1971-72, was allocated to the Cardiff Centre.

The Centre was envisaged as co-ordinating existing and extending audio-visual services and the developing of facilities for educational television. As long courses offering especially formal qualifications in the field of production, audio-visual aids, and intensive development work in C.C.T.V. and allied

activities were specifically excluded in the notes of guidance, the main tasks were those of building up service and advisory facilities on a mobile and flexible basis with an extremely low intial budget. The fact that the University of Wales consists of four widely spaced University Colleges, a National School of Medicine, and the Institute of Science and Technology, placed a premium on the development of facilities within each institution with the Cardiff Centre as a resource and advisory centre and, as such, attempting to assist in the development of a greater consciousness of the role of audio-visual aids in the teaching field.

However, as it was also essential to engage in limited production and operational research if the Centre was to provide focal activities, the Centre's terms of reference were defined so as to cover the general intent of the grant and to provide for otner activities - development, research and teaching not specifically included in the notes of guidance. In consequence the Centre's functions initially were defined as:

(1) To provide within the University College a rationalized approach to the purchase of audio-visual aid equipment and to assist co-operatively with the other teaching institutions of the University of Wales.

(2) To build up a pool of basic audio-visual equipment, to operate long and short term loan schemes, undertake or arrange regular maintenance together with the

supply of spare parts and replacements to those institutions and departments within them wishing to use such facilities.

(3) To advise on the purchase of audio-visual aid equipment.

(4) To arrange for the bulk purchase of audio-visual consumables and to pass on the benefits of discounts so obtained.

(5) To provide, on request, short courses in the use of audio-visual aids to staff and students.

(6) To engage in film and television recording and production to meet University needs.

(7) To act as a base for research activities of an operational nature in audio-visual field.

Accommodation

The Centre was initially housed in accommodation previously assigned to the Communication Studies Unit, comprising three offices, a duplicating room, and a small demonstration room. This room was subsequently allocated to the Director Designate of the Sherman Theatre. To this was added the old B.B.C. sound recording studio also in the same building but separated by two floors belonging to the Department of Extra Mural Studies. With the completion of the new Faculty of Education Building in 1969 in Senghennydd Road, a dark room was added to the Centre together with access to a work-shop, and a classroom-workshop area designed for graphics. In 1970

the Centre undertook the responsibility for the day to day management of the Arts Faculty language laboratory adjoining the studio, and the Faculty of Education language laboratory.

Staffing

The staffing build-up was conditioned by the size of the recurrent grant, areas of activity to be engaged in, and the growth of demand for services. In order to make the widest possible spread of activity, appointments were made at the lecturer level and below with the Professor of Education acting as Head of the Centre. As at that time no systematic records of audio-visual aid equipment in the University College were available nor had a well defined expression of need from the University as a whole arisen, the University College agreed to the establishment of the following posts in October 1968:

Audio-Visual aids officer	(television and electronics)
Audio-Visual aids tutor	(short courses, graphics and photography)
Research assistant	(media evaluation and short courses)
Secretary typist	

To enable the Centre to function, the University College agreed to establish a second post a year before the grant was sufficiently large to meet the commitment.

In 1970 the two additional posts of:

Electronics technician

Graphics technician

were established.

Equipment

There being no existing stock of equipment, the capital grant of £12,500, which was augmented by a further £7,000 unspent from the Communication Studies Unit, was allocated on the basis of:

(1) availability to meet University needs as a whole;

(2) mobility and flexibility;

(3) expressed need.

To this end the Centre offered to conduct surveys of Departmental Audio-Visual Aid needs. This offer was taken up only by University College Cardiff and thirty-seven departments were covered.

At an early stage visits were paid to other institutions by the staff of the Centre. It appeared from these desirable to offer a mobile television and servicing unit as the main item which could best help the institutions concerned. The unit was unique in that the camera and recording van was designed by the Audio-Visual Aids Officer and was produced at a cost of £8,000, far lower than could otherwise have been obtained.

Capability to meet demands

Up till 1971 the Centre met all requests made of it, but this was mainly due to the slow build up of demand on time and services from the distant constituent Colleges of the University of Wales.

Other factors which limited the range of activities were:

(1) The lack of a well designed building capable of meeting the full range of the service activities for which the Centre was intended. Limitations which at times caused difficulty were:

(a) The Education Building, in which visual aid courses were held for staff and students, was heavily committed and therefore time-tabling became difficult;

(b) The absence of special viewing and listening rooms.

(c) The absence of a television studio to meet the growing demand for television services meant that the mobile unit was being used for purposes which restricted its freedom of movement. Equally this caused delays in meeting requests for its services. Heavy commitments for Civil Engineering, demonstration teaching, architectural

model demonstrations and students communications projects also resulted in delays in the production of material for sociology, the introduction of library of video tapes and a computer education series.

(d) The location of the Centre's offices on a third floor inhibited both the movement of materials which of necessity were stored separately, and the best use of staff whose working places were scattered.

The second stage resulted from a request by the Head of Department of Education which indicated that:

(1) The Centre would function more effectively if it were made an independent unit, responsible to a Committee of Senate and with its own director, thus displaying openly that it was intended to serve the whole university.

(2) There was an urgent need for the Centre to be established in its own buildings, preferably centrally situated, but certainly with its facilities centralised and having direct ground floor access.

(3) Its current terms of reference relating to the other constituent Colleges of the University of Wales were unrealistic in terms of finance and not really welcomed by the other colleges.

These requests were acceded to, and an Educational Technology Committee was set up with cross faculty, administration and library representation and a Director appointed in 1972. New accommodation adequate for its functions was found and adapted, whilst the University of Wales and the U.G.C. agreed to release the Centre, which has been renamed "Centre for Educational Technology", from its responsibility to the other colleges.

Between 1972 and 1974 the Centre entered into the Programmed Learning field and produced materials on the use of audio-visual aids, and began working on programmes for certain science departments. Some teaching, mainly on the place of 'objectives' in the teacher training field was carried out.

Since 1974 these two types of activities have been extended, whilst the earlier roles were maintained so that in 1976 the new director, who succeeded the first in 1975 could report:

> "The Zoology Part 1 course has now been successfully taught by self-instructional techniques for one academic year. The staff of the Centre have worked exceptionally hard to produce the materials in the form of self-instructional texts and audio-visual support."
>
> "The new M.Ed. course in Educational Technology (part of the Education Department's M.Ed. programme) has been presented successfully to over 40 students many of them from overseas."
>
> "Video production services have continued to expand so that at present every major faculty building in the College is now equipped for video replay, most of them for colour replay using the Umatic video cassette standard. As a result of this continuing increase in utilisation of video as a teaching medium, the Centre has expanded its facilities to include Sony U-matic video and a Umatic electronic editing machine and colour rover recording equipment." (1)

---

1. Director's Annual Report, Senate Report 1970/75, University College, Cardiff.

Details of the use of video and other services are given in the report's appendix. During this year advisory trips to Nigeria and Iran were also undertaken.

In 1976-77 the Centre has extended its range of interests and is now beginning to plan a scheme to develop a resource centre for teachers providing sandwich courses, using distance teaching techniques. In a communication to the Dean of the Faculty of Education, the Director indicated that the advantages of such a scheme over traditional courses could be summarized as:

> "(a) The costs of the course are lower.
> (b) Students are sent most materials and need little release from in-service activities.
> (c) Resource use within the College is maximized during those periods when students attend.
> (d) Such a course is capable of handling larger student numbers.
> (e) Such a course would satisfy the requirements of the Council and of L.E.A.'s in that costly release of students would be avoided.
>
> What I have done is to outline a course of Educational Technology to be studied part time over two years, either for a diploma or possibly as a component of the B.Ed. programme" (1).

THE CLWYD CENTRE FOR EDUCATIONAL TECHNOLOGY

A second type of service which is of interest to Ahmadu Bellow University with its wide ranging responsibilities in the field of sub-university education is the Clwyd Centre for Educational Technology in North Wales which was developed from the former

---

1. Private communication.

Flintshire Audio-Visual Aids Services, when the former counties of Flintshire and Denbighshire were combined and serving some 290 primary, 34 secondary schools as well as the North East Wales Institute of Higher Education.

The Centre which is situated in a purpose-designed building shared with the Theatre Clwyd, operates under the control of the Local Education Authority and is staffed as follows.

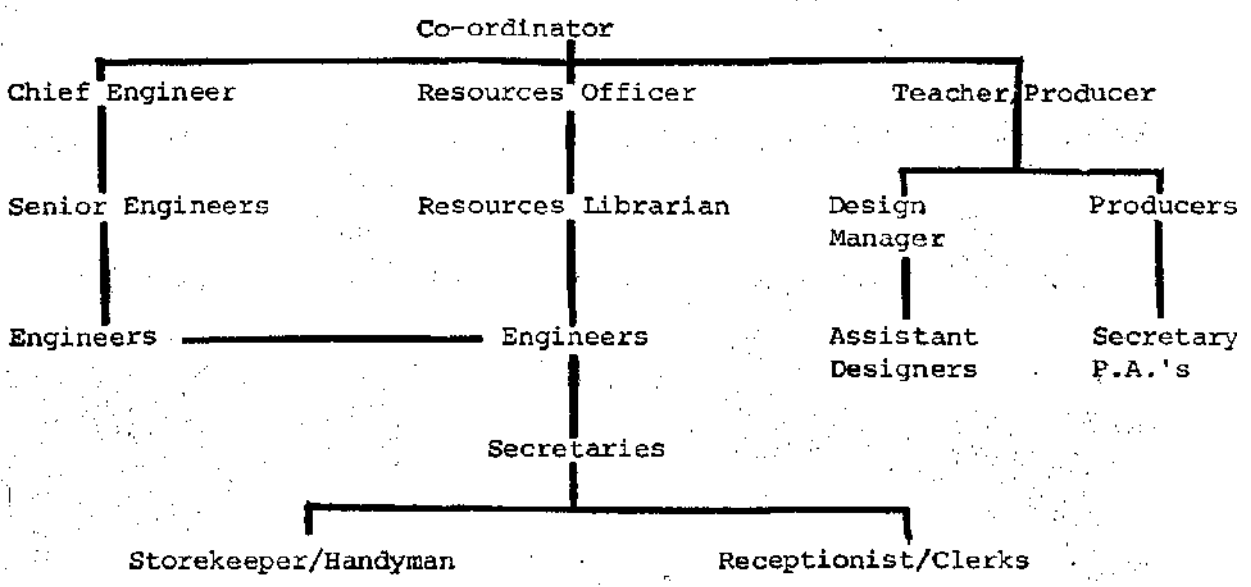


Fig. 2: Clwyd Centre for Educational Technology - Establishment

The Centre's activities can be grouped under three main headings:

(a) Acquisition, Maintenance and Retrieval

(b) Production and Reproduction

(d) Professional Development and Training.

(a) Acquisition, Maintenance and Retrieval

"This aspect of the Centre's work is important in an almost literally mechanistic sense since the acquisition and evaluation of the proliferating educational 'hardware' currently available is a basic necessity. Equally vital, too, is the continuing development of the 'software' library, and the build-up of a collection of aids to teaching and resources for learning which will be of relevance and importance."

"To achieve these aims - and to make retrieval efficient - the purpose-designed workshop facilities on the ground floor and resource library on the first floor have been located two very considerable areas. The functions carried out in these areas will be basic to the success of the Centre in fulfilling its role as the regional nerve centre of information on 'hardware' and resources of 'software'."

"This first aspect of the Centre's work continues to develop the excellent work already being carried out in the traditional field of 'Audio-Visual Aids'. The new contribution of the Centre will be in its second and third aspects which are very closely related, viz. production, reproduction, professional development and training."

(b) Production and Reproduction

"The Centre embraces an impressive range of facilities for the production and reproduction of resources for learning, teaching, information, and record purposes. To begin with its most complex and sophisticated aspect, the CCTV studios, with its 3-camera operation has the capacity to produce television materials that exploit the full range of media-film, slide, graphics, personal presentation, etc. The CCTV programmes produced will be recorded on videotape and then replayed in the various school, college or community locations as required."

"Associated with the CCTV studio there will also be film-making facilities; and the production of slides and sound tapes separately and as joint 'packages' will also be possible. But the production facilities at the Centre are not exclusively concerned with electronic and projected media. The very spacious graphics studio with its associated model-making facilities has been designed to cater for any two- or three- dimensional work that teachers or lecturers may wish to undertake".

"Along with these facilities for production in a wide range of media there is also a reprographic unit which can copy and multiply materials either for distribution in the region or storage in the resource centre. It will, of course, be necessary to present the materials produced for evaluation within the Centre itself and

such presentations will take place in the lecture theatre on a lower floor. This Theatre, with its sophisticated facilities for multi-media presentation, will be a heavily used feature of the Centre. Educational Technologists have researched into individualised and small group learning situations but they are equally concerned with maximising the effectiveness of the more traditional lecture-type confrontation. The lecture theatre will, in this sense, be a trial laboratory as well as a valuable facility."

" Production, Reproduction, Presentation - these seem in isolation to form a self-contained aspect of the Centre's work but the crucial element in them all is the involvement of educators and it is in this way that the material productivity of the Centre is closely allied to its role in the professional development and training. In one sense, this account of the Centre's work has begun with the end product; what we have finally - and most importantly - to consider is the educational significance of the process."

(c) Professional Development and Training

'Most of the research and development which has hitherto been undertaken in the field of 'Audio-Visual Aids' has been concerned with increasing efficiency and measuring the improvement in learning which results from the exploitation of varoius media. Much of the training of educators in this field has centred upon

familiarisation with equipment. In other words, the media have been seen as additions, almost adornments, to teaching and learning situations which have already been structured."

"The new contribution of educational technology (highlighted in our earlier definition) is that it is problem-based and not gadget-oriented and the significance of this for the Centre is clear. Its developmental function must begin from the deliberations of groups of educators and communicators who share a common concern or pre-occupation, and the provision of a group discussion and conference area on the first floor is a recognition that before any actual practical work is undertaken, the nature and scope of the problem to be solved will have been treated in some detail."

(d) Research

"(i) A study of means of improving visual perception among slow learners (twelve specialist teachers on one year secondment).
(ii) The design and production on video tape of a series of case studies in school counselling and guidance (four school counsellors on weekly 'day release').
(iii) A study of the potentials of videotaped material in the training of primary school teachers on one term assignment.
(iv) The teaching of number concepts to infants - potential of the technological approach (twenty infant teachers - one afternoon per week).
(v) Sixth form/undergraduate 'feed back' - series of Saturday morning and vacation session on sixth form choices with their implications for university work (one careers counsellor, two sixth form directors of studies and sixth formers/undergraduates from the region)." (1).

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1. Programmed Learning and Educational Technology, Vol. 10, No. 3, May 1973, pp. 187-190, 195.

> "When the Educational Technology Centre is in full operation - early in 1975 - it will bring together in one well-equipped building facilities which at the moment are either dispersed or non-existent in the region. Its success will be a function of the skills and enthusiasm of the staff together with the motivation of teachers and educators who are prepared to take a new, radical look at teaching and learning in a technological society.
>
> It has been said that education is the last of the cottage industries: perhaps this Educational Technology Centre can help to quicken the pace of the industrial revolution!" (1)

Here again one notes the increasing concern with quality of instruction.

CONCLUSIONS

From this survey of the developments in the United Kingdom, University College Cardiff, and Mold one can clearly discern the following major points:

(a) Provision needs to be made for all aspects of Educational Technology - hardware, software and techniques.

(b) Success demands well trained personnel, adequate finance and buildings if the services are to be properly accepted and provide a real service to consumers.

(c) Consumers must be wooed, especially in the university field, and there must be a close involvement of the teaching staff in the activities of an Educational Technology Centre if it is to develop the appropriate ambience.

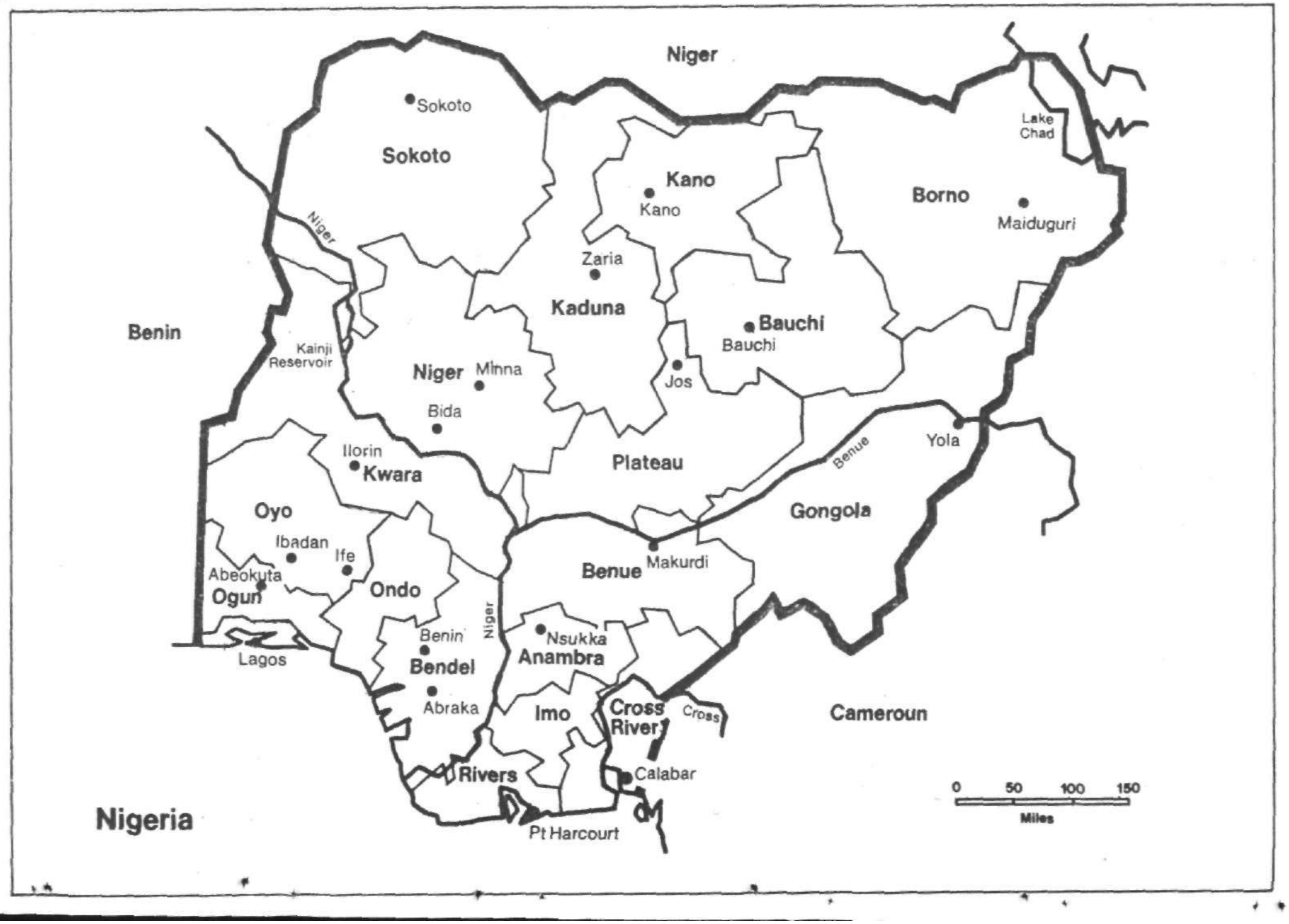
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1. ibid, p.195.

(d) It must be shown to be responsive to needs of others, act as a resource centre on demand and be clearly involved in the work of departments if centre staff are to be accepted.

(e) Although a Centre can provide resources to other institutions, it cannot control from a distance. Even where co-ordination is sought all institutions being co-ordinated must have a responsible role to play in the activities of the co-ordinating agency.

(f) There is considerable scope for specialization and rationalization in the area of the expensive operations.


Niger
Sokoto
Sokoto
Lake Chad
Kano
Kano
Borno
Maiduguri
Niger
Zaria
Kaduna
Benin
Bauchi
Bauchi
Kainji Reservoir
Niger
Minna
Jos
Bida
Ilorin
Kwara
Plateau
Benue
Yola
Gongola
Oyo
Ibadan
Ife
Abeokuta
Ogun
Ondo
Benue
Makurdi
Niger
Benin
Nsukka
Anambra
Lagos
Bendel
Abraka
Imo
Cross River
Cross
Cameroun
Rivers
Calabar
Pt Harcourt
Nigeria
0 50 100 150
Miles

CHAPTER 3

NIGERIAN UNIVERSITIES AND THE GROWTH OF EDUCATIONAL TECHNOLOGY

INTRODUCTION

The first university institution in Nigeria was University College Ibadan which was established in 1948 and until 1962 when it became an independent University, taught for degrees of the University of London although its syllabuses were in fact drawn up in Nigeria. The second stage in the development of university education in Nigeria was the acceptance in 1961 by the government, of the Report "Investment in Education", chaired by Sir Eric Ashby. Four new universities were established. The Universities of Lagos, Nsukka and Zaria together with Ife, the latter, on the basis of a minority report from a Western Region[1] member of the Commission. It was estimated by the Report that the required student enrolment by 1970 would be 7,500 but the Federal Government agreed on the higher number 10,000. In fact by 1970, university student enrolment figures had reached 13,945, even after having been slowed down by the Civil War. The University of Benin was established in 1970 and as a result, the total enrolment figure by 1972-73 had reached 19,733 students. The third stage occurred in 1975 when the Federal Military Government established four new universities and three university colleges, the new universities being Calabar, Maiduguri and Sokoto; in addition the Jos campus of

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1. Fafunwa, A. B: The Commonwealth Universities Yearbook 1976, Vol. 3, The Association of Commonwealth Universities, London, pp. 1763-1766.

Ibadan University became an autonomous university, while three new University Colleges were established - Kano, Ilorin and Port Harcourt. As of 2nd March, 1977, these three colleges have been given full university status as has Abdulai Bayero University College Kano.

Nigerian higher education is a fast growing activity; so fast that information cannot be guaranteed as up to date at the time it goes to the press both with regard to student population and the number of new institutions. Table I shows the enrolment figures from 1963 to 1975 in all Nigerian Universities.

TABLE I

STUDENT ENROLMENT IN NIGERIAN UNIVERSITIES -

Total, Actual and Projected Enrolment 1962-1976.

UNIVERSITY	1962-63+	1970-71	1972-73	1973-74**	1974-75	1975-7
University of Ibadan	1,689	3,661	4,110	5,526	6,174	
University of Ife	244	2,332	3,624	5,040	5,585	
University of Lagos	131	2,090	2,605	4,473	4,999	
University of Nigeria	1,257	2,934	3,891	4,975	6,240	
Ahmadu Bello University	425	2,820	5,086	5,830	6,615	
University of Benin	-	108	417	630	790	
	3,746	13,945	19,733	26,474	30,403	33,000

** Projected enrolment (Fafunwa; History of Education in Nigeria) p.250, Allen & Unwin

+ The Committee of V.Cs of Nigerian Universities; The Udoji Commission p.40.

In the early stages Nigeria has and will continue to rely on considerable outside support for teaching and research and especially to meet the new needs created by expansion. This has been done in the past through external aid programmes and through co-operation with overseas universities. The introduction of Audio-Visual Aids for teaching support were first provided in the Institutes and/or Faculties of Education. These audio-visual centres were closely associated with the Institutes because their function placed an emphasis on teaching especially in relation to in-service training and consultancy. A review of the roles of the Institues of Education and the type of external support will help to identify the type of functions they have performed in this respect.

UNIVERSITY OF IBADAN

The Institute of Education, apart from the educational technology aspect of its normal teaching courses, has developed programmes and resources in the following areas. An audio-visual aids unit was established in 1962 with the aid of U.N.E.S.C.O., to provide:

(a) Cheap and robust teaching aids suitable for use in schools.

(b) Courses in audio-visual units.

(c) In conjunction with the Western Region Television and the Ministry of Education, television educational programmes.

Its scope:

With the opening of the new buildings in 1967 its work was increased to include:

(d) The provision of loan audio-visual service to local schools and colleges.

(e) Development of more sophisticated teaching materials.

(f) Provision of resource services to the University.

(g) Production of simple educational television programmes on a closed-circuit basis.

(h) Development of programmed learning materials (in conjunction with the U.K. Ministry of Overseas Development).

In terms of Educational Technology facilities the new building opened in 1967 provides for the following:

(a) The publishing of the West African Journal Education (Since 1962).

(b) The publishing of the West African Journal of Educational Research (since 1974).

(c) A well equipped Audio-Visual Aids Centre with 16 mm movie and still film and television production facilities.

(d) Darkroom

(e) Audio-Visual workshop.

(f) Film and filmstrip library.

(g) An eighteen-booth language laboratory.

(h) A television studio.

(i) A 400 seated fully-equipped cinema.

Other work in the educational technology field has included:

(a) Experimental work in the teaching of reading (financed by the U.K. Ministry of Overseas Development).

(b) Experimental work in Programmed Learning (financed by the U.K. Ministry of Overseas Development).

(c) Production of television teaching materials (financed by U.N.E.S.C.O.)

(d) The development of new secondary school syllabuses (together with texts) for the West African Examinations Council (financed by the Carnegie Corporation).

(e) Oversight of the Nigerian Military Academy Examinations.

(f) Oversight of the Nursing Council of Nigeria Examinations.

(g) Development of an International Evaluation Unit promoting post-graduate research facilities (financed by the Carnegie Corporation).

(h) Developing materials for special education (financed by the Canadian Universities Services Overseas).

UNIVERSITY OF LAGOS

The College of Education at Lagos has support facilities for its own teaching courses only. The major activities which can be

regarded as educational technology are carried out by the Department of Mass Education and the Comparative Education Studies and Adaptation Centre (C.E.S.A.C.); both of which are separate from the College.

The Department of Mass Communication has facilities for radio and television production and an audio-visual aid unit (as does the College of Education). Its main teaching concern is with courses geared to a variety of forms of journalism and public relation activities at the undergraduate level.

C.E.S.A.C. was established with a Ford Foundation grant to work in the field of school curriculum renewal, and educational and administration modification with the aim of improving the quality of education at the sub-university level.

None of the three is engaged in providing general university educational technology services.

UNIVERSITY OF IFE

The Institute of Education, founded in 1968, apart from its on going courses has engaged in:

(a) The provision, loan and maintenance services of audio-visual in the state education system.

(b) The production of simple educational programmes on a closed-circuit television basis.

(c) Oversight of 'Ife Teacher Centre' (for curriculum

development) and the 'Expansion School' programme (financed by Ford Foundation) which aims at:

(i) Developing the primary curriculum on a semi-vocational basis.

(ii) The use of Yoruba as a medium of instruction in primary schools.

(iii) The teaching of English at the secondary school level.

Its facilities include:

(a) A publication unit.

(b) A fully equipped television studio (closed-circuit).

(c) Still photography studio and darkroom.

(d) An A-V loan services section and workshop.

Other things produced include:

(d) Bilingual materials production and content validation.

(e) Production of textual materials cheaply.

(f) Evaluation by television (using videotapes) of student reaction to resource materials and lectures.

(g) Graphics, and different forms of reprographics.

(h) Tape recording.

(i) Cine film (including projectors and cameras).

(j) Television-T.V. for off air educational broadcasts.

UNIVERSITY OF NIGERIA NSUKKA

The main educational technology resource attached to, but formally autonomous within the Institute of Education, is the Curriculum Development and Instructional Materials Centre (C.U.D.I.M.A.C.). Its role was initially defined as follows:

(a) In conjunction with the Ministries of Education, develop curriculum materials and methods.

(b) Organize workshops and seminars for developing and disseminating curriculum and methods innovation.

(c) Produce cheap local materials suitable for schools.

(d) Stimulate the use of commercial products.

(e) Improve teaching by research and simulation.

(f) Assist teacher training colleges on the use of audio-visual aids.

(g) Equip and maintain audio-visual aids.

(h) Provide academic staff of the Faculty of Education with facilities for research and demonstration.

Its facilities include a building adjacent to the Faculty of Education which contains a display hall and a seminar room; storeroom, and offices together with some science workshops containing audio-visual aids and science equipment. Equipment available includes:

(a) Cameras (including a rostrum copy camera), 8mm cine.

(b) Projectors (16 mm, 8 mm with splicer and editor, and automatic slide).

(e) Reprographic equipment (electric typewriter, scanner and thermo copy).

(d) Taperecorders and amplifiers.

Currently there is a request which has been formulated to the Nigerian Universities Commission for large scale growth of facilities, geared closely to University type educational technology needs. The request includes the following:

Production Resources Requirements:

Printing:

(a) Multilith 1250 press (or similar).

(b) Electrostatic, (same size) platemaker for paper plates.

(c) C.D.C. photocopier/platemaker, aluminium plates.

(d) Small manual or power guillotine.

(e) Wire stitcher.

(f) Hand collating unit.

(g) Size-change process camera and a plate maker (long-term).

(h) Four-colour silk screen unit (for flip charts, maps, flannel board materials 'cut out' models etc.

(i) Back-up stencil printer (for short runs).

In addition:

(a) A small photographic studio with 35 mm rostrum document copying and slide production capability and processing darkroom. A store and maintenance area for climate sensitive equipment.

(b) A graphic unit capable of producing original and copied line and tone illustrations of both a formal and free line variety.

(c) A lay-out typing service with differen type faces (preferably electric) to ensure good offset reproduction: eg. IBM "Golf ball" type.

(d) Simple workshop construction and modelling - for kits of aids construction.

Audio and Projection Services

(a) A small sound studio - equipped to produce tape-slide linked units. Sound-proofed, studio is convertable for use as in-service courses.

(b) Overhead transparencies and slide section, both for demonstration of equipment and design process for in-service.

(c) CCTV and VTR unit (as potentials for television programmes). This facility is needed immediately for recording teaching methods programmes for play-back assessment.

The following has been requested as the staff establishment:

Professional Direction

	Senior Staff	Junior Staff
Director	1	
Secretary		1
Subject Directors	5	
Evaluator	1	
Language Moderator	1	
	8	1

Production of Central Resources

	Senior Staff	Junior Staff
Production/Resource Officer	1	
responsible for:		
Layout typist		1
Graphic artist		1
Printer/Plate maker		1
Assistant and silk Screen Operator		1
Collators, general assistants, cleaners		2 (according to volume of work
Resources Librarian		1
Workshop technician		1
Driver/Projectionist		1
A.V. Technician/ Recording Photographer/Document copy CCTV Operator	))))	1 (if all are combined)
	1	11 to 12

Up to date CUDIMAC's activities have been largely to schools and thus it has initiated:

(a) A Seminar on language teaching 'Resources and methods in Language Education' for CUDIMAC publication.

(b) Production of mathematics syllabus and texts for primary schools.

(c) In conjunction with the Nigerian Educational Research Council (NERC) produced an integrated social studies syllabus for primary schools.

AHMADU BELLO UNIVERSITY

The first support from the USAID was provided in 1963 when a team of experts from Indiana University arrived at the Department of Education to establish the first Audio-Visual Aids Communication Unit before the Institute of Education was established in 1965-66 session. Its acting Director also was the Head of the A-V unit for some time.

> "In 1971 it was felt that the name 'Audio-Visual Unit' was not adequate, particularly as a lot of teaching materials would be produced by it; e.g. photographs transparencies, graphics etc. It was agreed to suggest the name - Educational Technology Centre (now renamed Centre for Educational Technology) as being more comprehensive."

Status

> "(a) Should be entirely independent of any establishment and become a self-contained organisation with its own premises, budget and staffing like the University Library.
> (b) Its Advisory Committee be constituted similar to the Library Committee with appropriate terms of reference".

Its functions were defined as to provide:

(a) Educational and Instructional Technology as an academic discipline within the programmes of the Faculty of Education.

(b) Services as an academic discipline within the programmes of the Institute of Education.

(c) Services for Adult Education.

(d) Services both within and outside the University Campuses.

(e) A service-function to university teaching departments as a teaching support.

(f) Services for extra curricula activities - such as clubs, societies both within and out of campus.

Its establishment was agreed to be:

(a) Head of the Unit (up to Professorial status) who should be an educationalist - specialising in instructional technology.

(b) Assistant to the above of up to Senior Lecturer status with similar educational background.

(c) Graphic Artist.

(d) Technician/Maintenance and Repairs (may be simple manufacturing).

(e) Photographer.

(f) Technician/Operator.

(g) Lab-Attendants (intermediate and junior staff)[1]

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(1) Vice-Chancellor's Office; Official Release, dated 14th June 1971, 'Educational Technology Centre'.

It was decided that the Centre be accommodated partly in the Faculty of Education and partly in the Institute of Education, but as an autonomous unit, until suitable staff was available. Initially senior sta salaries were paid for by the Carnegie Corporation, whilst the remainder was paid for by the University.

Its facilities now include:

(a) Motion Picture projectors (16mm and 8mm) silent and sound.

(b) Filmstrip, plaque, overhead and slide projectors; micro bioscope projectors and portable screens.

(c) Loud speakers, amplifiers, microphones and public address system.

(d) Six teaching machines and reading papers shadowscopes.

(e) Tape recorders (b/mains), record players, radio-cassette, cassette decks, tape synchronizer and headphones sets.

(f) 8mm film editor.

(g) Over 2,000 pieces of films, filmstrips and film loops.

For its present services in the Faculty of Education space is provided for:

(a) Campus Service Unit - which provides loans, film previewing and loan; projection and public address services (on the ground floor).

(b) Graphic services - such as simple lettering, poster designing etc. (ground floor).

(c) Electronic services - concerned with repairs of A-V equipment (ground floor).

(d) Dark room - Black and white print/slides (on the first floor).

(e) Administration - office space for secretarial work (first floor).

Between 1965 and 1970 the Annual Reports on the activities of the Centre showed that its services included:

(a) The provision of A-V facilities to faculties in and outside the main campus for teachers through workshops organised by the Institute of Education.

(b) Provision of A-V courses to post-graduate and art certificate students.

(c) Provision of simple courses on the use of A-V materials to Junior staff.

(d) Provision of film consultancy services to staff on demand.

(e) In conjunction with the Institute of Education and the British Information Service, organising in-service training for tutors.

(f) Provision of loan services to Institute of Education Centres outside the campus.

(g) Participation in national activities such as those by bodies like the Nigerian Audio-Visual Association (NAVA), and the Zaria Health Society.

This survey has not included the newer universities whose educational technology resources are still at a lower level of provision. It will be noted however that the Institutes of Education themselves do not have facilities, staff or equipment necessary to provide good wide ranging services. Even allowing for the retention of equipment in other departments and service units (e.g. libraries and printing units), it is apparent that the state of development is not dissimilar to that found by the Hale or the Brynmor Jones Committees in the U.K. Given this it is obvious that considerable advances need to be made in Nigeria and that the Nigerian Universities Commission (NUC) itself might emulate the U.K. University Grants Committee (UGC) to develop interest, provide necessary support, and decide on the appropriate rationalization and specialization needed to make the minimum necessary advances.

In developing this range of activities one could envisage the institutions designated as major resource Centres as being Ibadan, Ahmadu Bello, Nsukka and either Lagos or Ife. It is the author's intention in outlining his model for Ahmadu Bello to assume both for local and national needs that this University will be regarded as a major centre.

CHAPTER 4

THE CURRENT SITUATION AT AHMADU BELLO UNIVERSITY

INTRODUCTION

This chapter is divided into three main sections:

(A) The Current Organization and Provision of Educational Technology.

(B) The 1975 Report of the Visiting Consultant.

(C) The Results of the Investigation into University staff attitudes, desires and ideas for the development of educational technology.

The chapter ends with a comparison of the situation with that in the United Kingdom Universities and with an identification of the major factors that will influence the development of the model to be proposed in the final chapter.

A. The Current Organization and Provision of Educational Technology.

(a) The situation at Ahmadu Bello must be viewed against the past and future projected growth of the University. This is summarised in Tables II and III below.

TABLE II

STUDENTS AND STAFF NUMBERS 1962-76

Session	Student Enrolment	Senior Staff Establishment
1962-63	425	142
1963-64	558	186
1964-65	719	217
1965-66	956	294
1966-67	914	259
1967-68	1,366	329
1968-69	1,745	341
1969-70	2,351	501
1970-71	2,820	789
1971-72	3,840	896
1972-73	5,052	1,389
1973-74	6,050	1,503
1974-75	6,742	1,760
1975-76	7,651	1,900

Student Population, Distribution and Growth between 1962 and 1976

Student population and distribution into faculties and subsequent growth show the following pattern drawn from data given in Appendix III.

(a) In the first year, 1962-63, of the total 425 students;

Arts and Social Sciences 159 (37%)

Administration, 39 (9%)

Engineering 134 (31.5%),

Science 12 (2.8%),

Law 9 (2%),

Environmental Design 67 (15.7%) and
Agriculture 5 (1%).

(b) By 1970 the total number of students rose to more than six times the original figure (2,820) whilst the growth in faculties was almost proportionate to the above (a) distribution.

(c) However, in 1976, with the total student enrolment at 7,651 the distribution showed that:
Arts and Social Sciences 1,403 (18%); Education 1,266 (16.5%) were the largest. Apart from the School of Basic Studies with 860; the next to follow were Law 686 then Administration 641; and Science 574. Environmental Design, Engineering and Medicine each have over three hundred students in their list, whilst veterinary medicine and Agriculture have just a little over two hundred students for that year.

Staff numbers have also been rising with student enrolment. The University was opened in 1962 with a Senior Staff establishment of 142, then by 1976 it was 1,900. Considering all the Senior Staff as academics and involved in classroom contact with students, the student ratio to staff is one to four (1:4) but this number contains some administrators and senior service staff e.g. medical, maintenance and transport together with full time research fellows so that the ratio of teaching staff to students which is still high is nearer 1:5.

This is in part due to the heavier weightings of staff in medicine, and some of the other small but professionally complex faculties such as Agriculture, further by the fact that in Education and Agriculture a significant proportion of staff are engaged in extra mural activities.

TABLE III

Growth of Faculties in Ahmadu Bello University

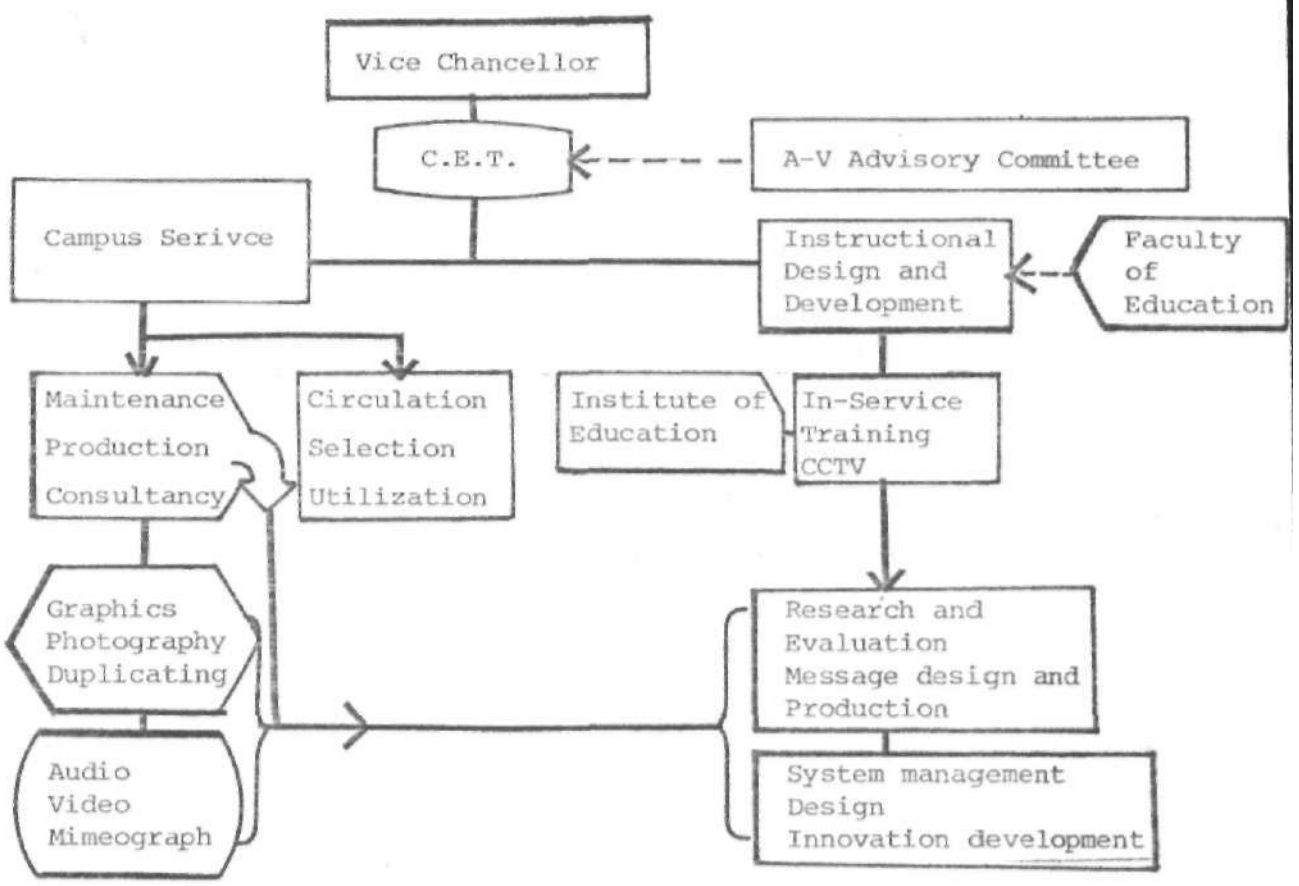
Session	Faculties Established
1962-63	Administration, Agriculture, Environmental Design, Arts and Social Sciences, Engineering, Law, Sciences.
1963-64	Arts and Islamic Studies.
1964-65	Veterinary Medicine.
1967-68	Medicine
1968-69	Education
1969-70	School of Basic Studies

THE ORGANIZATION OF EDUCATIONAL TECHNOLOGY

The present organization of the Educational Technology Centre is as shown in Fig. 3.

FIGURE 3

ORGANIZATION OF EDUCATIONAL TECHNOLOGY CENTRE

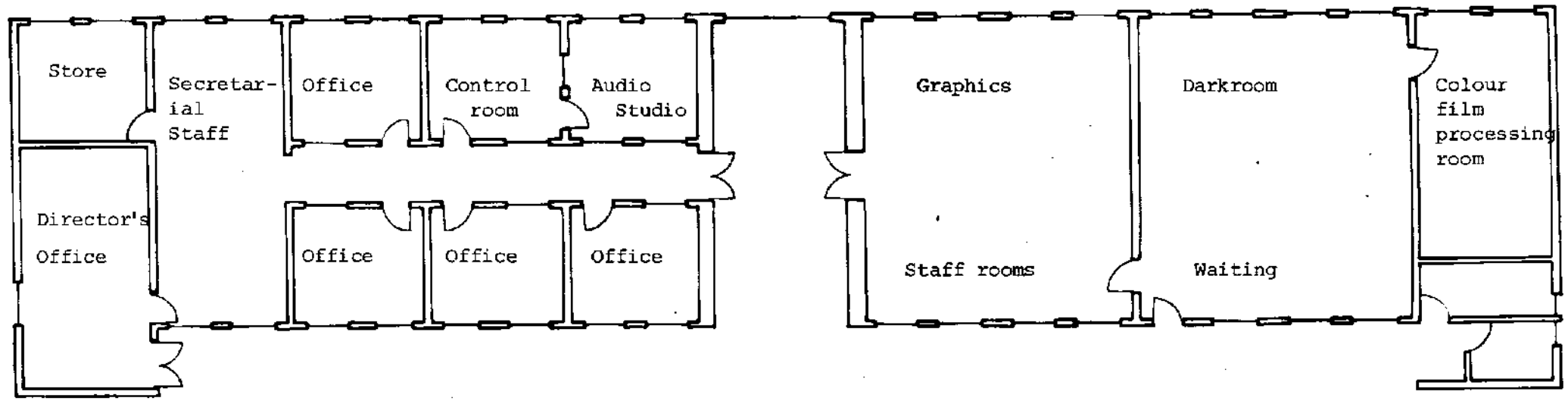


The Centre operates as follows:

(a) The Director is directly responsible to the Vice-Chancellor and through him to the University Senate.

(b) The Advisory Committee of Educational Technology has cross-faculty, Administration, Computer Centre and Library representation with the Director as Chairman.

FIGURE 4



Proposed Darkroom and Graphics for Educational **Technology Centre**
Ahmadu Bello University.

(c) Accommodation

A permanent site for the Educational Technology Centre has been approved by the University but plans for a new building will take a considerable time to be implemented and as a result, to meet demands for immediate working space, a low-cost building designed to accommodate both the photographic and the Graphic services has been approved and this should be ready by June 1977 on campus.

The building provides for two large rooms - a work space for graphic and photographic darkroom; four smaller office spaces, a recording studio and the Director's Office. The services located here should include both the Campus service unit and the maintenance workshop which are left out from the temporary plan. This sketch plan is given in fig. 4.

It should be noted, however, that the present state of development provides for only some of the Centre's essential services whose activities need to be more greatly co-ordinated for more effective campus provision and still located in the Faculty of Education.

(d) Establishment

The present staff establishment is given in Table IV.

TABLE IV

THE PRESENT STAFF ESTABLISHMENT OF EDUCATIONAL TECHNOLOGY CENTRE

	Senior Staff	Junior/ Intermediate Staff
Director*	1	
Snr. Lecturer (IDD)+	1	
Snr. Engineer (CCTV)+	1	
Production Manager++	1	
Media Librarian +	1	
TV and Film Producer+	1 or 2	
Assistant Technician (maintenance)		1
Secretary		1
Copy typist	1	
Technical Assistant (campus)		1
" " (graphics)		1
Lab. Attendant (campus)	1	
" " (photography)		
Driver Projectionist	1	
Cleaner	1	
	6 or 7	4 4

(*) Senior staff already in position
(+) Senior staff not yet offered Centre's appointment but being considered.
(++) Staff on Study Leave: All the rest are established.

The establishment and organisation of the Centre are as follows:

(a) A permanent Director has been appointed to the Centre's staff, he is Dr. Festus E. Oke; who was, until his arrival, the Director of the Instructional Media Centre A and M University, Tallahassee, Florida in the United States of America.

(b) For some of the positions listed on the Centre's Senior staff establishment, temporary arrangements have been made with the Faculty of Education for staff in relevant fields to deputise especially in instructional development and design; as well as the media retrieval organisation in the Campus Services.

(c) Efforts to recruit additional senior staff have been intensified whilst the production staff member of the Centre is being trained on a two-year study leave scheme between University College Cardiff and Ahmadu Bello University.

(d) The junior and intermediate staff listed on page 3 are in post.

(e) Functions

Following its terms of reference listed in the previous chapter, the services fall into two main categories, the Campus Services and Instructional Programmes drawn up by the Instructional Design and Development panel (I.D.D.) whose membership is partly drawn from the Faculty of Education and the Institute of Education. This panel

will also be responsible for Closed-Circuit Television (CCTV), research and educational development when these activities become fully operational.

CAMPUS SERVICES

(a) PhotographY -

Production of overhead transparencies, overlays, processing and printing from 35 mm (black and white) and photocopying (thermo copy), while colour processing is still sent overseas.

(b) Graphic Services -

Simple illustrations - there is no form of reproduction work such as printing, silk screens or lino.

(c) Equipment loans (mainly films, film scripts, slides, projection equipment and setting up public address systems).

(d) Consultancy -

Provision of advice to staff on A-V purchase and usage.

(e) Electronic Services (Maintenance) -

Maintenance and repair of equipment.

INSTRUCTIONAL

(a) Production of multi-media courses for curriculum improvement in conjunction with faculty members.

(b) Provision of A-V courses to student teachers, in-service training and workshops on media methods.

(c) Short-term basic skills training courses to junior staff; for example, press journalism one week seminar (with United States Information Services) 1976, December.

OTHER SERVICE UNITS

(i) Institute of Education

The Art and Materials department comprising of both graphic and audio-visual services is accommodated in the head office of the Institute of Education. Its services include:

(a) Serving the Institute's Board of Studies for art.

(b) Curriculum development at primary level.

(c) Short in-service training courses in the use of A-V.

Its equipment includes:

(a) Printing press.

(b) A-V aids unit (mainly projection equipment - film and slides).

(c) Graphic section (mainly book illustrations) and a film library.

Its staff establishment consists of two senior staff, two intermediate and three junior.

(ii) Institute of Agricultural Research (IAR)

(a) In conjunction with State Ministries of Agriculture, the Institute produces materials based on research results

translated into local languages in a simplified form in the shape of posters, leaflets and booklets for farmers to use.

(b) In-service training programmes for extension workers.

It is equipped and staffed to meet its own photographic and printing service needs.

(iii) Division of Agriculture and Livestock Services Training (DALST)

(a) Operates all schools of Agriculture belonging to the University including that at Samaru. In terms of Educational Technology it provides the following:

(b) Short in-service diploma and certificate courses for State sponsored students.

(c) Courses on the use of A-V equipment, photographic and simple darkroom techniques.

Its equipment includes a collection of A-V equipment such as projectors and darkroom equipment for black and white photography.

Accommodation -

It is located on a first-floor one-room apartment with a small end room for the A-V technician and an assistant.

Out of the main campus:

(iv) Advanced Teachers' Colleges (Zaria and Kano)

Location -

A.T.C. Zaria - opposite Kongo (Institute of Administration) 8 miles (approx).

A.T.C. Kano - Kano city (opposite Bayero University) 110 miles (approx).

In terms of Educational Technology, these colleges obtain their supplies from the Institute of Education. Both have small central units and a pool of projection equipment and appropriate software. Emphasis is mainly on service provision except in some specialist areas, for example, while Zaria provides equipment for language teaching Kano has a closed circuit television studio currently not operating due to unservicability.

(v) Medicine

The Medical Illustration Unit in Zaria hospital eight miles distance from the Main Campus facilities:

(a) Colour photography processing unit.

(b) Darkroom and graphic units.

(c) Cameras of specialist nature for close-up photography in 35 mm format, copy duplication and captions etc.

It produces:

(a) Services - slides and illustrations for displays, slide processing in colour and black and white, recording (tape) lectures.

(b) Instructional

- Tape-slide packages for medical students

- evaluation of results of student progress.

One can see then from the foregoing that at Ahmadu Bello University:

(a) The Educational Technology Centre is only one of many audio-visual units.

(b) There is a lack of an all-embracing co-ordination.

(c) Educational Technology has a close connection with education.

(d) The skeleton nature of the Centre's staff - the establishment being still in embryonic form.

(e) The services are still essentially at the level of the provision and use of equipment.

THE 1975 CONSULTANCY REPORT*

Through the auspices of the Inter-University Council for Higher Education Overseas, Dr. G. D. Moss, Director of the Centre for Educational Technology, University College, Cardiff visited the University so as to prepare a report on the future development of the Educational Technology services.

In this report he noted:

(a) That teaching staff of the University would welcome the further development of the services provided by the Centre but that centralisation of all projection equipment was not acceptable to most teaching staff. He further noted that the effective provision of services was currently limited by:

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* Consultancy Report, Dr. G. D. Moss, 'Educational Technology Centre - Ahmadu Bello University, Nigeria, Nov. 1975, pp.1-6.

(i) Lack of an overall policy regarding the functions, the purchase, allocation and housing of equipment.

(ii) Lack of well dispersed and well equipped teaching and lecture accommodation.

(iii) Lack of qualified staff.

(iv) Lack of comprehensive services to meet the needs of individual departments.

(v) Lack of adequate spare parts and repair manuals for equipment.

(vi) Lack of a suitable vehicle for equipment delivery services.

(vii) Lack of efficient internal or external communication.

(viii) Poor functioning of the existing loan and maintenance sections.

The recommendation in the report dealt with these problems as follows: '

(i) Organisation -

(a) An assessment of the specialist needs of all teaching departments.

(b) Permanently equipping major teaching rooms with basic A.V. aids.

(c) Permanent loan of equipment to major user departments.

(d) Improvement of efficiency by better oversight of loan photographic and repair services.

(e) Provision of reception facilities to cover photographic services to minimise interuptions during processing.

(f) Bulk purchasing of consumables and repair components such as films, bulbs, slide holders and recording tapes.

(g) Installation of internal telephone lines between service areas and reception.

(ii) Accommodation -

(a) Designing and building the new E.T.C. for more effective control and increased efficiency.

(b) Provision of physical facilities with greater and better co-ordinated space to be a feature of the new E.T.C.

(iii) Establishment including staff training -

(a) Provision of purpose-designed, short technical courses at Cardiff or by Cardiff staff on short term visits to ABU.

(iv) Facilities -

(a) Purchase of basic darkroom equipment such as a drying cabinet, drum glazer, copying stand, lenses - macro, telephoto and wide angle and colour processing equipment.

(b) Bulk purchase of photographic consumables such as chemicals, papers and films.

(c) Installation of public address systems.

(d) Purchase of specialist equipment such as Nagra or Uher reel to reel tape recorders and portable colour television sets.

(e) Purchase of maintenance and diognostic test equipment together with reference manuals.

(v) Finance -

(a) Adequate financial provision to be made for all purchasing needs that do not conform with the present annual budgeting system on its recurrent provisions.

(b) Sufficient capital investment for a new ETC building and equipment, and the purchase of suitable transport.

(c) Separate budgeting for the Campus Service of the Centre to the whole University.

(d) Financial support for long staff training schemes and short term courses to be sought from the British Counsil or Inter-University Council for Higher Education Overseas through the Vice-Chancellor.

(vi) Relations with other University Resources -

(a) Centralised control should be discouraged in favour of decentralising such services as projection (only specialist equipment for reasons of cost or for extra operational skill) should be centralised.

(b) Provision to intensive user departments of basic equipment on a long-term loan basis with maintenance and servicing being done by the Centre.

(c) Confirmation of the expressed desire by departments for the production of self-instructional materials should be sought and acted upon.

(d) The loan service should be made more reliable.

(vii) Long term scheme -

(a) A development of more complex production facilities such as television, film, text and quality audio production.

(b) Production of self-instructional texts and programmed work to promote more effective learning through a printing unit.

(c) Provision for the advanced training of staff at Ahmadu Bello University to be made by training and secondment abroad.

One can say that the recommendations highlight the need for: The ETC to be physically separate from the Education Department so as to emphasize its central service nature and remove the impression that it is a part of the Faculty of Education provision.

That the activity is still essentially at level one - use of A-V equipment, with increasing provision for level two activities - software. As yet the Centre is not yet thought of as providing level three services.

UNIVERSITY STAFF AND THE DEVELOPMENT OF EDUCATIONAL TECHNOLOGY

Questionnaire -

It was noted in Chapter two that the Hale Committee recognised that the development of Educational Technology depended ultimately on

staff desires and that in this respect staff should be closely involved in the development of these services. To this end, and also as a check on the consultant's Report, it was decided to use a questionnaire to elucidate senior staff attitudes and opinions on various aspects of educational technology as it affected Ahmadu Bello University. In particular it was felt necessary to investigate the following points:

(i) To weigh up the degree of urgency felt by staff of the need to develop educational technology.

(ii) The extent to which the various departments of the University are satisfied with the present range of services.

(iii) Whether departments would be likely to agree to an earlier report* on the organization of the University in which the Centre would become part of the Faculty of Education.

(iv) To ascertain the range of demands for services and to elicit whether there was any difference in demand between that for traditional equipment and the newer teaching aids.

(v) The extent to which the type of staff appointments - permanent as opposed to contract affected attitudes towards the existing administrative and committee structure of the Centre.

(vi) To collect and collate ideas on the future direction of growth of Educational Technology in Ahmadu Bello University.

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* Report and Recommendations of the Council/Senate Committee on Dowuona and Ford Consultant Reports on the Administrative Structure of Ahmadu Bello University, May 1976.

The answers to questions 1 and 6 it was assumed, would be obtained by the number of respondents in the case of the first; by an open-ended question with regard to the latter; an analysis of the respondents' status would give the answer to question 5.

To answer the remaining questions the following hypothesis were posited.

(a) There is no difference between the various departments of the University in the way departments see the present role of the Centre and that which it should carry out.

(b) Academic departments are likely to accept the Dowuona Reports on the organisation of the University in which the Centre would become part of the Faculty of Education.

(c) The newer the visual-aid, the higher its acceptance, compared to its older and traditional counterpart.

Questionnaire Design

A questionnaire containing 37 questions was then constructed, covering the following points:

(i) Siting (3 questions)

(ii) Administration (8 questions).

(iii) Finance (5 questions).

(iv) Services (17 questions).

(v) Future development (4 questions).

(vi) Open-ended question on respondents' views (1).

The questionnaire was pre-tested on selected staff at the University College Cardiff for purposes of clarity and after minor modifications was designed as shown in appendix VI.

In style the questionnaire was constructed using a Lickert type scale with the scoring modified as follows:

(a) Positive scores (5 + 4) were joined to give a positive weighting.

(b) Negative scores (1 + 2) were joined to give a negative weighting.

(c) Neutral (3) was ignored.

(d) Missing scores were noted.

Four hundred and thirty-one (431) questionnaires were distributed to 41 departments in the main campus of Ahmadu Bello University. (64 were returned on time from 15 departments - a response rate of 14 percent of staff and 37% from departments.)

RESULTS

The results were analysed in terms of the five main points to be investigated.

(I) Degree of urgency felt by staff of the need to develop educational technology.

The response rate was as follows: The number of questionnaires returned was 64 representing 14% of the staff and the number of departments included in this group was 15 representing

37% of departments. A breakdown of those replying gave the following features:

TABLE V

RESPONSES TO QUESTIONNAIRES

Faculty	No. of responses	P/tage (%)
Education	12	19.2
Ed. Technology	1	1.6
Inst. Education	6	9.6
Kashim I.Library	2	3.2
Computer Centre	2	3.2
Biological Sciences	3	4.8
Chemistry	1	1.6
Vet. Medicine	7	11.2
Agriculture	5	8
Engineering	5	8
Languages	4	6.4
Arts and Soc. Sciences	4	6.4
Geography	1	1.6
Sociology	1	1.6
Poli. Science	1	1.6
	55	88
Departmental attachment	9	or 12%

The departments were then grouped as follows:

(a) Education (Education, Educational Technology and the Institute of Education) were joined to form the responses group of that name.

(b) Sciences (Biological Sciences, Chemistry, Vet. Medicine, including Agriculture and Engineering) were joined to form a second group.

(c) Social Sciences (Languages, Arts, and Soc. Sciences including Architecture, Geography, Sociology and Political Science) were joined to form the third group.

(d) Computer Centre and Kashim Ibrahim Library responses were ignored - for reasons that they are both service areas.

(e) Missing department of origin were noted.

A breakdown of replies into these three groups gave the following features:

	No. of Responses	P.C. (%)
Education	19	35.2
Sciences	23	42.6
Soc. Sciences	12	22.2
Total	54	100.0
No. of missing observations	10	
No. of returned Questionnaires	64	Details are given in Appendix VII

A breakdown of the responses into the categories of Senior Lecturer and above compared with junior staff, from those who completed the questions, shows 27 of the former (51.9) and 25 of the latter (48.1) while missing observations were 12. An analysis of academic qualifications gave the following results - Holders of or studying for doctorate 39 (75%), masters degree and below 13 (25%) with 12 missing observations.

The information suggests that although the sample is small compared to the total staff population of the University's Senior Staff, it cuts through a broad spectrum of interests, and that many of the respondents are decision makers, being Heads of Departments and members of the University Senate.

However it demonstrates clearly that there is no great general sense of urgency and that the position closely resembles that of the U.K. Universities at the time of the Hale and Brynmor Jones reports.

(II) Need for the Present Range of Services.

The Range of Services

The information regarding present services are shown in tables VI and VII. Tables VI and VII suggest that the teaching aids as well as traditional aids are in high demand from all the departments. Slides are the most in demand (100%); tape-slide programmes and the production of audiotapes both showed a high rate of demand as did overhead transparency production (98%); Film production - 8 mm films (95%), 16 mm films (95%). The loan service of projection equipment (96%), servicing projection equipment (96%) was more favourably rated than some relatively newer approaches such as self-instructional or programmed learning ideas (87%). There is a fair amount of neutrality from the Sciences (18%) with regard to the production of video tapes and tape-slide programmes (12%) as against the demand for slides and overhead transparencies that were almost unanimous.

TABLE VI

Questionnaire responses of an AV service needed from CET.

Statements.		Departments.								Missing Observations.
		Education		Sciences		Soc.Sciences		Total		
		N	PC(%)	N	PC(%)	N	PC(%)	N	PC(%)	
ETC should produce slides	Yes	19	35.2	23	42.6	12	22.2	54	100	10
	No	-	-	-	-	-	-	-	-	
	No opinion	-	-	-	-	-	-	-	-	
ETC should produce OHP transparences	Yes	18	35.3	22	43.1	10	19.6	50	98	13
	No	-	-	-	-	1	2	1	2	
	No opinion	-	-	-	-	-	-	-	-	
ETC should produce 8mm film.	Yes	17	37.8	17	37.8	9	20	43	95.6	11
	No	-	-	1	2.2	1	2.2	2	4.4	
	No opinion	2	4.4	4	8.8	2	4.4	8	17.6	
ETC should produce 16 mm film	Yes	18	40.9	16	36.4	8	18.2	42	95.5	13
	No	-	-	1	2.3	1	2.3	2	4.5	
	No opinion	1	2.3	4	8.8	2	4.6	7	15.7	
ETC should produce videotapes	Yes	18	42.9	14	33.3	10	23.8	42	100	11
	No	-	-	-	-	-	-	-	-	
	No opinion	1	2.3	8	18.4	2	4.6	11	25.3	
ETC should produce SI texts	Yes	15	32.6	15	32.6	10	21.7	40	87	13
	No	2	4.3	2	4.3	2	4.3	6	13	
	No opinion	1	2.1	4	8.4	-	-	5	10.5	
Produce tape-slide programmes	Yes	15	40.5	13	35.1	9	24.3	37	100	16
	No	-	-	-	-	-	-	-	-	
	No opinion	3	8.1	6	12.6	2	4.2	11	24.9	
ETC should produce audiotapes	Yes	19	41.3	17	37	10	21.7	46	100	14
	No	-	-	-	-	-	-	-	-	
	No opinion	-	-	3	6.3	1	2.1	4	8.4	
Should loan projection equipment	Yes	19	37.3	20	39.2	10	19.6	49	96.1	11
	No	-	-	-	-	2	3.9	2	3.9	
	No opinion	-	-	2	3.9	-	-	2	3.9	
Should service projection equipment	Yes	18	36.7	20	40.8	10	20.4	48	98	11
	No	-	-	-	-	1	2.0	1	2.0	
	No opinion	-	-	3	6	1	2.0	4	8.0	
Number of questionnaires submitted		64								

Table VII

Questionnaires responses on AV services need from CET.

Statements.		Departments								Missing Observations.
		Education		Sciences		Soc. Sciences		Total		
		N	PC(%)	N	PC(%)	N	PC(%)	N	PC(%)	
Should operate centralised photo service	Yes	16	33.3	17	35.4	11	22.9	44	91.7	10
	No	-	-	4	8.3	-	-	4	8.3	
	No opinion	3	6.2	2	4.1	1	2.0	6	12.4	
Operate centralised maintainance service	Yes	18	36.0	20	20	12	24	50	100	10
	No	-	-	-	-	-	-	-	-	
	No opinion	1	2.0	3	6.0	-	-	4	8	
Centralised purchasing for economy	Yes	19	38	16	32	11	22	46	92	9
	No	-	-	3	6	1	2	4	8	
	No opinion	-	-	5	10	-	-	55	10	
Centralised graphics	Yes	17	37	19	41.3	9	19.6	45	97.8	10
	No	-	-	-	-	1	2.2	1	2.2	
	No opinion	2	4.4	4	8.8	2	4.4	8	17.4	
Offer course design and consultancy	Yes	15	35.7	14	33.3	11	26.1	40	95.1	11
	No	-	-	2	4.7	-	-	2	4.7	
	No opinion	4	9.4	6	14.1	1	2.3	11	26.1	
Offer centralised xerox service	Yes	16	32.0	18	36.0	10	20.0	44	88.0	10
	No	2	4	2	4	1	2	5	10	
	No opinion	1	2	3	6	1	2	5	10	
Maintain all teaching equipment	Yes	19	35.1	17	31.4	8	14.8	44	81.3	9
	No	-	-	6	11.1	4	7.4	10	18.5	
	No opinion	-	-	4	7.4	1	1.8	5	9.2	
Design and present AV courses	Yes	17	31.4	21	38.8	11	20.3	49	90.5	6
	No	2	3.7	2	3.7	1	1.8	5	9.2	
	No opinion	2	3.7	2	3.7	-	-	4	7.4	
Participate in national AV conference	Yes.	18	33.9	18	33.9	11	20.7	47	88.5	6
	No	1	1.8	4	7.5	1	1.8	6	11.1	
	No opinion	1	1.8	3	5.6	1	1.8	5	9.2	
Number of questionnairs submitted.										

Table VII shows a strong interest in the continuation of existing services such as:

(i) Centralization of photographic services (91%), while others include;

(ii) Centralization of maintenance services (100%); Audio-Visual purchasing (92%); Graphics (97%), and Xerox services (88%).

Once again the pattern of demand follows that of the U.K. universities in the early 1960s. The emphasis is on the use of more traditional equipment and with heavier users, an emphasis on the more traditional equipment and supporting programmes.

(III) Status and Siting of the Centre.

Here the replies are shown in table VIII. Table VIII shows positive responses which identify the status, position and the finance of the model acceptable to staff. Dealing with it in general terms, the information from the questionnaire suggests that most respondents in ABU showed a highly favourable attitude towards an independent (88%), self-contained (89%) Educational Technology Centre; which is centrally located on campus (81%), has its own budget (89%), and is empowered to surcharge consumer departments for the cost of materials (89%) of it is so wished.

Table VIII

QUESTIONNAIRE RESPONSES ON THE ROLE, STATUS AND FINANCE OF CET - (Positive Responses).

Statements.		Departments.								Missing Observations
		Education		Sciences		Soc.Sciences		Total		
		N	PC(%)	N	PC(%)	N	PC(%)	N	PC(%)	
Position - ETC should occupy central position on the campus.	Yes	17	40.5	10	23.8	7	16.7	34	81	13
	No	2	4.8	4	9.5	2	4.8	8	19	
	Not stated	-	-	7	15.4	2	2.2	9	19.8	
Status - ETC should be as independent as other departments.	Yes	17	39.5	16	37.2	5	11.6	38	88.4	14
	No	2	4.7	1	2.3	2	4.7	5	11.6	
	Not stated	-	-	3	6.9	4	9.2	7	16.1	
ETC should be a self-contained building	Yes	16	34.8	18	39.1	7	15.2	41	89.1	13
	No	1	2.2	2	4.3	2	4.3	5	10.9	
	Not stated	2	4.4	2	4.4	2	4.4	6	13.2	
Finance - ETC should be provided with capital and recurrent budget.	Yes	18	35.3	22	43.1	10	19.6	50	98	11
	No	-	-	1	2	-	-	1	22	
	Not stated	1	2	-	-	1	2	2	4	
ETC should charge consumer departments for costs.	Yes	15	32.6	17	37	9	19.6	41	89.1	13
	No	2	4.3	2	4.3	1	2.2	5	10.9	
	Not stated	2	4.3	2	4.3	1	2.2	5	10.9	
Number of Questionnaires		64								

Note - Not all percentage sum up to 100

Table IX

QUESTIONNAIRE RESPONSES (Negative Results).

Statements.		Departments.								Number of Missing Observations.
		Education		Sciences		Soc.Sciences		Total		
		N	PC(%)	N	PC(%)	N	PC(%)	N	PC(%)	
Administration — The main library should decide and administratively control ETC.	Yes	0	0	1	2.2	0	2.2	1	2.2	13
	No	18	39.1	19	41.3	19	41.3		97.8	
	No opinion	1	2.2	2	4.4	3	6.6	6	13.2	
ETC should be part of the Institute of Education and be controlled there.	Yes	0	0	4	10.8	1	2.7	5	13.5	13
	No	14	37.8	11	29.7	7	18.9	32	86.5	
	No opinion	5	13.5	6	16.3	3	8.1	14	37.8	
ETC should be part of the library	Yes	1	2.2	22	4.4	1	2.2	4	8.9	12
	No	16	35.6	17	37.8	8	17.8	41	91.1	
	No opinion	2	4.4	3	6.6	2	4.4	7	15.4	
ETC should be part of Agric.(ERLS).	Yes	-	-	-	-	-	-	-	-	13
	No	18	40	17	37.8	10	22.2	45	100	
	No opinion	1	2.2	4	8.8	1	2.2	6	13.2	
Finance - ETC should have no budget.	Yes	-	-	2	4.9	-	-	2	4.9	14
	No	15	36.6	16	39	8	19.5	39	95.1	
	No opinion	4	9.5	3	7.3	2	4.8	9	21.6	
ETC should charge for services and costs	Yes	5	11.1	3	6.7	1	2.2	9	20.	12
	No	11	24.4	16	35	9	20	36	79.4	
	No opinion	3	7.2	2	4.4	2	4.4	7	16.0	
Number of questionnaires completed.		64								

Table IX identifies some characteristics of the model to which respondents have very strong negative reaction. Four hypothetical suggestions were rejected almost unanimously:- the proposition that -

(a) It be part of the main library (91%) or be administratively controlled from there (98%); and even the suggestion that it be part of the Faculty of Agriculture was unanimously rejected (100%). Respondents feel strongly that the Centre should be provided with its own budget hence the statement that the Centre should not have a budget of its own was strongly rejected (95%). Staff would definitely object if departments are surcharged for services.

Table X gives some responses whose results cannot be determined, for example, the proposition that the ETC should continue to be part of the Faculty of Education where it is at present located, showed that there is varying opinion between different departments. Scientists and Social Scientists are reasonably favourably disposed by a narrow majority for such an administrative pattern. That the present Committee structure should continue to have administrative control over the centre, was fairly unfavourable. Of those answering 62% being against and 38 percent in favour, a further 16 percent of the total have no opinion. The reverse was the case with the statement that the administration of the Centre be responsible to the Vice-Chancellor.

Table X
Questionnaire responses (undetermined result).

Statements.		Departments. Education N	Education PC(%)	Sciences N	Sciences PC(%)	Soc.Science N	Soc.Science PC(%)	Total N	Total PC(%)	Number Missing Observations.
Administration — ETC should form part of Education and be controlled from there.	Yes	8	18%	11	25%	6	13%	25	56%	
	No	9	20%	7	16%	3	6%	19	43%	11
	No opinion	2	-	4	-	2	-	9	16%	
AV Committee be responsible for ETC administration.	Yes	3	8%	7	20%	3	9%	13	38%	
	No	6	17%	9	27%	6	17%	21	62%	14
	No opinion	9	-	5	-	2	-	16	29%	
User Committee be selected for ETC administration.	Yes	2	5%	4	10%	4	10%	10	24%	
	No	11	26%	16	39%	4	10%	31	75%	13
	No opinion	6	-	1	-	3	10	10	20%	
Let the ETC administration be responsible to the VC.	Yes	10	27%	8	22%	5	14%	23	64%	
	NO	3	8%	7	19%	3	8%	13	36%	18
	No opinion	6	-	5	-	3	-	14	37%	
Finance - Let ETC be maintained at 2% univerity budget.	Yes	1	10%	1	10%	-	-	2	20%	
	No	3	30%	2	20%	3	30%	8	80%	24
	No opinion	6	-	5	-	3	-	14	76%	
Services - Let ETC offer services to schools	Yes	7	12%	11	18%	4	6%	22	37%	
	No	6	10%	6	10%	7	12%	19	32%	10
	No opinion	6	-	6	-	1	-	13	22%	
ETC should offer diploma and degree certificate to students.	Yes	14	26%	6	11%	4	7%	24	45%	
	No	1	2%	8	15%	5	9%	14	26%	2
	No opinion	4	-	8	-	2	-%	14	26%	
Number of questionnaires completed		64								

Note - Not all percentage sum up to 100 due to rounding errors.

Of those answering 64 percent were in favour with 36% against but surprisingly 37 percent of the total abstained from committing themselves. The feelings against administrative red-tape was expressed by a respondent's remarks below:

> "The only responsibility of the ETC should be directly to the Vice-Chancellor. As for ... the less Committees and related bodies are involved, the more effective work is possible."

Some comments from staff on the role of the Centre seem to emphasize its service roles - thus over-shadowing its instructional functions, for example:

> "The film lending section seems to be the most prominent service section of the ETC. One wonders if there is more to it. I feel strongly that the ETC should be in a position to develop coloured films, slides etc."

Another person had this to write:

> "A distinction ought to be made between the instructional Media Centre and an Educational Technology Centre. I am convinced that what we have here is the former not the latter."

There are limits in the Centre's current instructional role in that it awards neither certificates nor degrees in communication skills and the emphasis on its predominantly service role compared with the university library is shown in the next comment which reads:-

> "No; I should like to see the ETC helping in such a course, but not providing it. I see it as a service (K.I. library does not do much for Library science students). I am very much in favour of ETC giving short (e.g. one evening) introductions to different AV techniques. Many academic

> staff like myself know very little about the use of AV and we must be shown how to use various techniques, what a tape-slide programme is etc. I learnt all I know in a set of six evenings given by Liverpool; Talks, demonstrations, trial oneself, coffee and sandwiches - more practice and demonstrations. Very useful indeed."

The need to establish an independent unit for the purpose of serving a University wide function was in the interests of everybody so it scored highly. One wonders if such a unit would be more efficient if it is localised in a departmental enclave; however one member had this idea about such a role function:

> "... In developing countries, I do not see the need, I do not see the wisdom of creating new units such as the ETC in a university where it has to compete with the Faculties for the required experts. The ETC should be a central resources Unit whose amenities will be at the services of the experts in the faculties for instructional and research purposes."

The need for the ETC to generate its own level two software production was emphasized by respondents from Engineering and the Social Sciences as they wrote:

> "It should pay less attention to conventional hallowed techniques but devote more time to establishing processes which work better and produce more effective environment ...
>
> It should actively promote the production of better adapted easily locally reproducible materials and equipment and not be passive consumer of sophisticated; ill-suited and over-expensive techniques and equipment - creativity please! "

> "ETC should endeavour to effect the evolution and use of locally available materials in the production of their services. ETC should involve itself as a matter of must in the running of all scientific conferences hosted by ABU with the view of providing such necessary AV aids, without being asked."

(IV) Preference for new visual aids.

A reference to the points made in the second section above shows that staff are more readily disposed to existing aids and services They want more of the existing equipment and as a result this order of preference should be considered in the future development of the Centre's preferences. The last section above shows some indication of a need for locally produced materials - softwares for existing aids, which are more familiar should be encouraged first before those for the newer aids.

The hypothesis that newer aids would be more acceptable academic staff than the older aids is therefore rejected as staff clearly showed a relatively lower preference for the former than the latter.

(V) Staff attitudes relative to their appointments.

Table XI shows the staff attitudes towards the existing administrative and committee structure of the Centre broken into two staff categories; those with tenure or permanent appointments as opposed to contract posts.

Table XI.

Questionnaire responses and type of appointments

Statements.		Appointment						Missing Observations
		Tenure		Contract		Total		
		N	PC(%)	N	PC(%)	N	PC(%)	
Administr - ation	ETC should form part of Education and be controlled from there.							
	Yes	20	40	9	18	29	58	
	No	10	20	11	22	21	42	4
	No.opinion	7	11.7	3	5	10	16.7	
AV Committee be responsible for ETC administration	Yes	12	30	5	12.5	17	42.5	
	No	17	42.5	6	15	23	57.5	5
	No opinion	9	15.3	10	16.9	19	32.2	
User Committee be selected for ETC administration	Yes	9	18.4	4	8.2	13	26.5	
	No	21	42.9	15	30.6	36	73.5	4
	No opinion	8	13.3	3	5	11	18.3	
Let the ETC administration be responsible to the VC.	Yes	16	34.8	12	26.1	28	60.9	
	No	14	30.4	4	8.7	18	39.1	4
	No opinion	9	15	5	8.3	14	23.3	
Finance - Let ETC be maintained at 2% university budget.	Yes	2	15.4	2	15.4	4	30.8	
	No	7	53.8	2	15.4	9	69.2	2
	No opinion	31	50	18	29	49	79	
Services - Let ETC offer services to schools	Yes	17	35.4	7	14.6	24	50	
	No	14	29.2	10	20.8	24	50	0
	No opinion	9	14.1	7	10.9	16	25	
ETC should offer diploma and degree certificate	Yes	15	31.9	10	21.3	25	53.2	
	No	16	34	6	12.8	22	46.8	0
	No opinion	9	14.1	8	12.5	17	26.6	
Number of questionnaires completed		64						

The suggestion that the Centre be part of the Faculty of Education and be administratively controlled from there showed that those on permanent appointment were more in favour of such an administrative proposition 20 as opposed to 10 while 7 abstained. Those on contract showed 9 in favour 11 against and 7 showed no opinion.

With regard to the proposition that the AV Committee be responsible for the administration of the Centre there was less agreement. Of those on tenure appointment 17 were in favour, 12 against while 9 abstained. On the contrary, among those on conract 5 were in favour 6 against while 10 gave no opinion.

The proposition that the Centre's Director be responsible to the Vice-Chancellor showed that of those on tenure appointment 16 in favour 14 against while 9 gave no opinion. Those on contract appointment were 12 in favour 4 against while 5 showed no opinion.

Attitude to Development:

The answers given throughout suggest that there is little support for recognition of the need for the development of a systems approach to University teaching, as yet.

CONCLUSIONS

The results of the questionnaire show clearly:

(a) Interest in the ETC at Ahmadu Bello University parallels that in the United Kingdom in the early 1960s.

(b) That an independently and separately financed centre is desired by those who are interested.

(c) That this is mainly in the area of the provision of equipment with supporting software production. There is little evidence of any desire for the development of a systems approach to teaching.

(d) There is little difference between the attitudes of those with tenure and those on contract or in terms of length of service, or seniority.

(e) There is more interest in the departments of Education, Veterinary Medicine, Institute of Education, Agriculture and Engineering, Languages, Arts and Social Sciences and Biological Sciences than the other departments.

The consequences for the proposed model are:

(i) Control -

The unit should be:

(a) Central

(b) Independent

(c) Separately financed

(ii) Provide:

(a) Level one services first,

(b) Level two services second.

(iii) And needs:

(a) Strengthened staffing.

(iv) There is need for a long term well mounted approach to developing the interest of the majority of staff and a need to plan carefully for the development of third level work for which the support of the staff will be vital. To this end success in the other two activities must be guaranteed first so as to build up a favourable climate of opinion. In view of the fact that hardware is expensive the quicker staff can be helped adopt a systems approach, the more economical will be the service.

It is interesting to note that these facts agree, in general, closely with the Consultant's Report.

CHAPTER 5

THE MODEL FOR AHMADU BELLO UNIVERSITY EDUCATIONAL TECHNOLOGY CENTRE

INTRODUCTION

The general pattern of development of educational technology so far identified begins with emphasis first on establishing the necessary hardware (level one) and the provision of the necessary services to keep such equipment functioning. Secondly an introduction of appropriate supporting programmes: (level two - software), and finally proceeding to teaching (level three- systems approach) and its application in solving specific problems of instruction and curriculum development.

Specific lessons for Ahmadu Bello University from the British and Cardiff experiences also include:

(a) The difficulty of providing services at a distance. In this connection Ahmadu Bello University has already lost Abdulai Bayero College, Kano : but is still responsible for a number of teacher training colleges.

(b) The Cardiff experience underlines the need for adequate finance in running services with linked institutions.

(c) The need for adequate, finance, accommodation and trained staff.

(d) The need to involve University staff in the developmental activity.

The model suggested here is based on the following broad assumptions:

(1) That the Educational Technology Centre at Ahmadu Bello University will be classed as a centre of high activity and will be so recognised by the Nigerian Universities Commission in its rationalization plans. In this connection, apart from acting as an interim resource centre for the new universities currently being established in the northern states of Nigeria, it could, as its special function become a national centre for the development of distance teaching methods and materials.

(2) That its main function will be geared to the tertiary educational level.

(3) That although the Centre will become the major centre within the University, other specialized units with clearly defined functions complementary to those of the centre will have a role to play. The Institute of Education in relation to secondary and primary education, the Institute of Agriculture in relation to farm extension services, the Medical illustration unit, an Institute of Administration in relation to Local Authority activities would fit this pattern as would the Audio-Visual Units in the Advanced Teachers Colleges which are linked with the University.

(4) That the development of Educational Technology through the three stages of activity as revealed in the United Kingdom will also occur in Nigeria.

THE EDUCATIONAL TECHNOLOGY CENTRE

A. Functions

The suggested functions of the Centre fall under three main headings:

(1) Campus Services

(2) Instructional Programmes

(3) Development Activities.

(1) Campus Services

(a) Equipment loans services - including permanent loan of equipment to major user departments;

(b) Responsibility for the permanently equipping of major teaching areas with basic Audio-Visual aids.

(c) The assessment of specialised audio-visual need for all teaching departments.

(d) Bulk purchase of consumables and repair components for Audio-Visual equipment.

(e) The maintenance, storage and servicing of Audio-Visual equipment.

To carry out these level one activities efficiently there is need for:

(i) An efficient management of loan and ordering services.

(ii) The installation of a good internal telephone network between the central service unit and operating points.

(f) Production Service for teaching materials covering printing, graphics, photographic audio, television and to a lesser extent film production. In this respect television and film production could be regarded as part of the long-term development and introduced at a later stage, as could, as indicated in the section on instructional programmes, the production of self-instructional materials.

These services constitute the software component of the Centre's activities and represent the level two stage of development.

2(a). Information:

The provision to customers of information, and where requested advice on:

(i) Appropriate equipment.

(ii) Specially designed teaching and learning materials.

(iii) Research and development in educational technology, especially tertiary education level.

(b) Instruction and Consultancy:

This should be provided not only at the advisory level but in conjunction with other appropriate departments at the academic and professional level in the form of both short workshops and as part of course work leading to formal qualifications. Here the emphasis should be on helping and teaching in the:

(i) Writing objectives.

(ii) Design of syllabuses.

(iii) Methods of Assessment.

(iv) Problems of innovation.

(v) Evaluation as an on-going activity.

(vi) Selection and use of Audio-Visual equipment and materials.

(vii) Preparation of relevant teaching materials.

(viii) Training in the maintenance of equipment.

(ix) Training in recording and production techniques.

The activities listed under 2(a) and (b) constitute the level three development and would need to be phased in over a period of time as demand grows and resources become available.

3. Development Activities:

These would relate to:

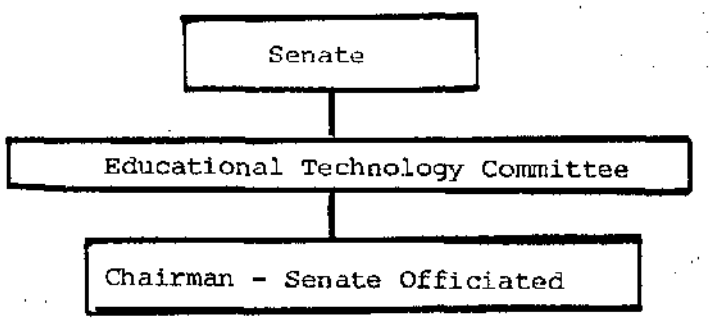
(a) The Centre's national role in University Educational Technology.

(b) In relation to demands met under the functions listed under (2).

B. ORGANIZATION

(a) The Centre would be centrally located, autonomous and separately financed.

(b) Committee structure.



Membership:

Ex-Officio

The Vice-Chancellor

The Director

The Librarian

The Director of the Institute of Education.

Elected by Senate:

One member from each faculty nominated by the ETC Centre

Two senior members of staff one representing production and the other equipment services.

COMMITTEE FUNCTIONS

The ETC Committee would make recommendations to the Senate regarding:

(i) Development plans - building, staffing and equipment.

(ii) Annual and quinquennial budgets.

(iii) Changes in management structure and posture.

(iv) Changes in policy regarding principles in relation to level one, two and three activities.

(v) Receive the Director's annual report.

(vi) Oversee the general management of the Centre.

TABLE XII

Proposed Senior Staff Establishment at the Centre for Educational Technology

Senior Staff Establishment	Number
Post	
Director	1
Production Manager	1
Senior Engineer	1
T.V. Film Producer	1
Media Librarian	1
Programmes Development - Officers	3

Note:

No establishment is given here for Intermediate and Junior staff, as these will be based on existing establishment plus growth through increased service commitments.

SENIOR STAFF ESTABLISHMENT

(i) Director

(a) Responsible to the Commitee for:

(a) Drawing up policy statements.

(b) Drawing up annual and quinquennial budgets

(c) Responsible for the oversight of authorised spending.

(b) Organizing of day to day administration

(c) Co-ordination of consultant and a technical evaluator with other university academic departments.

(d) Organization of external links with other universities at relevant levels so that Information services about research and development in teaching are maintained.

(e) Provision of information on specially designed teaching and learning materials.

(f) General oversight of the Centre's instructional and consultancy roles as in 2(b) above.

(ii) Production Manager

The production of educational materials covering print, graphics, photographic, sound and television. The unit should be organised to cope with the following activities:

(a) Assist staff to produce own teaching materials.

(b) Organize demonstration lessons to students on presentation techniques for communication projects.

(c) Production of materials for staff.

(d) Provision of reproduction facilities - both hardware and software.

(e) Recording and play-back of all teaching events - on video and audio tapes.

(iii) Senior Engineer

(a) Selection and provision of equipment and for maintenance services. He should:

(a) Provide advice on equipment purchasing for teaching and learning.

(b) Be responsible for the maintenance, storage, servicing and loan of equipment.

(c) Supply of equipment operation on demand.

(iv) Television and Film Producer

He would be responsible for all the preparation and all actual studio production activity.

(a) Writing of objectives.

(b) The shooting script.

(c) Shooting and recording both sound and vision.

(d) Editing.

(e) Evaluating the results using the performance objectives earlier identified and using this for further modifications of the original presentation through feedback.

(f) Organization of and the ultimate standization of all University television production equipment bearing in mind exchange possibilities of programmes with other universities.

(v) Media Librarian

The Librarian would deal with the organization of the purchasing of both book and non-book material in the Campus Service Unit including:

(a) Overviewing the classification, retrieval of materials, maintaining appropriate records.

(b) Being responsible for information co-ordination on media use.

(c) Information services on equipment utilization, loan or purchase.

(d) Loan Services.

(e) Links with other Educational Technology services and organization.

(vi) Programme Development Officers

The main concern here would be on instructional programmes development and research. Other activities within this section could include:

(a) Consultancy services on assessment methods.

(b) Data collection relating to instructional exercises.

(c) Development of new courses while improving and updating old ones.

(d) Preparation, and allocation of teaching methods and materials.

(e) Utilization and selection of Audio-Visual aids.

(f) Preparation of independent learning materials.

Accommodation and Equipment:

The total unit ultimately should provide for:

(a) Offices for administration.

(b) Studios and recording rooms.

(c) Maintenance workshops.

(d) Provision of physical facilities with greater and co-ordinated use of space to feature in the new ETC building.

(e) Meanwhile, the temporary building being built should be enlarged to give effective centralised accommodation for those services of the Centre located elsewhere.

Equipment:

Production facilities -

(a) Graphics and Layout

IBM Composer 72 with a golf ball typewriter (for texts)

Dry transfer Letraset for headlines or

Strip printers (photographic)

Stencil, electric mimograph

Electronic stencil scanner

Thermocopier or Xerox machine

Hand collating machine

Stitching (wire) machine

Small manual or power operated guillotine

Silk screen frame A4 size, 4 colours

Drying rack

Stencil cutting and tracing table

Offset press. Similar to Multilith 1250 or larger

Electronic plate maker

CDT plate maker

Size change process camera)These could be
)provided as part of
Vacuum frame printer and plate making sink)a longer term plan.

(b) Photographic Provision

Location, studio and rostrum photography in 35 mm black and white and colour transparencies (using self processing materials).

Processing, enlarging and slide reproduction in colour.

Document copying of high reproduction quality.

Production of O/H transparencies.

Washing, drying and glazing facilities.

(c) Closed Circuit Television Unit

1 Hitachi 3 tube chalnicon camera with 8 - 1 crank zoom fitted with a close up attachment (the camera also has an internal sync pulse generator).

1 Quickset Hercules tripod with Vinten Petral Head.

1 ITC 5000 Black and white camera with Cannon 5 - 1 zoon lens and lightweight tripod.

1 Vel Minimixer - 2 channel Vision Mixer.

1 Hitachi 18" colour monitor.

2 Electronome EVM 11 black and white P/V monitors.

1 Sony Editing U-Matic cassette recorder

1 set of audio equipment comprising:-

1 6 x 1 audio mixer

3 neck microphones

1 Goose neck microphone

2 Hand/stand microphones

1 8" Floor stand

1 Desk stand

1 Headphones

3 Pr T/B Head-sets

Set of Test equipment 2 charts, xy oscilloscope, pattern generator.

Set of cables and connectors.

Budget : £12,300 (May '77).

(d) Audio Recording

In addition to the audio equipment for television some other basic audio recording equipment could include:

1 professional 4 channel reel to reel tape recorder such as Teac A3340 or Tandberg 10 XD.

Cassette tape duplicator - Wollensak 2770 or Philips version.

1 reel to reel special recording machine for public lectures and seminars such as Revox A77, Nagra or Otari.

1 pair of loud speakers - AR 10 (Acoustic Research).

1 Tape synchroniser - the Helikon SS100 or Philips version (but more expensive).

1 Studio record player turn table - Denon.

3 sets of headphones.

1 Audio mixer.

Mobile Unit Vehicle with

Portable 300 watt 240v 50 cls generator (eg. Honda 3000)

Workshop

Bench, with wood metal vices

Set of woodworking tools

Hot wire polystyrene cutter

Hand power drill with full attachments.

Other Items

Air conditioning equipment.

Filing cabinet and steel cupboard.

Reprographic consumables etc.

Various spare bulbs.

8 mm cine camera (Bealiue or Nikon 810).

8 mm sound films.

16 mm cine camera.

16 mm sound film.

Animation rostrum camera 8 or 16 mm.

Appropriate cells.

In addition there should be:

Basic dark room equipment such as a drying cabinet

Drum glasser, copying stand, lenses - macro, wide angle

telephoto and colour processing equipment.

The Centre will also need a range of items such as photographic consumables initially - chemicals, paper and films.

CONCLUSION

Given this type of organization the Centre would be well placed to:

(a) Meet emerging departmental needs speedily and effectively.

(b) Act as a co-ordinating and resource centre for all the University Educational Technology activities.

(c) Expand its range and level of services ad the need arises.

(d) Provide appropriate ambience for the development and better awareness of the nature of educational technology in raising the quality of teaching and to meet new requests which will arise from this.

Ultimately however its full nature will only emerge if:

(a) The role that educational technology can play comes to be properly appreciated by the University Senior staff.

(b) The quality and quantity of the staff of the centre enables it to meet demands speedily, effectively and with courtesy.

(c) There is a proper level of financial support.

These three factors of motivation, manpower and money must be kept continually under review if the Educational Technology Centre is to provide the University with a proper return on its investment.

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APPENDIX

Appendix I	:	Senate Report, C.E.T. University College, Cardiff.
Appendix II	:	ABU Official Bulletin - Vice Chancellor's office "Educational Technology Centre.
Appendix III	:	Historical Students' Population growth (-ABU) in Faculties.
Appendix IV	:	Histogram showing The Growth of Senior Staff Establishment 1962-76.
Appendix V	:	Organizational Chart of CET Ahmadu Bello University Zaria.
Appendix VI	:	Questionnaire sample - University Staff and the Development of Educational Technology.
Appendix VII	:	Analytical Results.

are listed in Appendix 1V.

APPENDIX 1

B. Demand for Services

In fulfilling its prescribed functions the Centre has provided or is providing the following services:-

(1) Advisory and Planning:

(1) Within the University College:

(a) The design of the audio-visual aids arrangements and advice on equipment for -

(a) New University teaching hospital (C. C. T. V. layout and provision of teaching aids)

(b) University College of Wales: Design of Audio Visual Aid Building.

(c) University College Swansea. (C. C. T. V. matters)

(d) Llandaff, Caerleon and Cardiff Colleges of Education: Advice and co-operative services.

(e) Liaison with manufacturers on matters of common concern.

(2) C. C. T. V.

(1) Productions:

(a) Within the University College -

Education (criticism lessons and class observation)

Civil Engineering (Soil Mechanics demonstrations)

Industrial Relations (Broadcast playbacks)

Mechanical Engineering (preliminary trials)

Faculty of Arts (Overflow - visiting lecturers)

Bursar's Department (Decimal Programmes)

Biochemistry (visiting lecturers)

Physics (Music Students Familiarisation)

Zoology (observation of animals)

(b) University of Wales:

Appointments Board (Replays of Interview Videotapes)

(c) U. W. I. S. T:

School of Architecture (overflow and videotaping)

Department of Banking (overflow)

(d) School of Medicine:

Department of Mental Health (Interview recordings)

Dental School (Studio production assistance)

School of Nursing (Nursing techniques recordings)

Surgical Unit (Recordings and advisory assistance)

G. P. Unit (Interview recordings)

(e) University College Aberystwyth

Education (criticism lessons)

Political Science (Field exercise)

Registry (College introduction programme)

(f) University College Swansea:

Video tape: recording and advice

(g) University College Bangor:

Advice on Production and proposed mobile unit.

(h) Elsewhere:

Caerleon, Cardiff, Glamorgan and Llandaff Colleges of Education

Advice and co-operation on production.

College of Art Cardiff:

Art Education students' projects

(11) C. C. T. V. Engineering Service and Advice

Most of the above together with:

Physiology

Anatomy

Physics

and

U. W. I. S. T.

(3) Equipment Loans

(Equipment loans - 16mm. projectors, slide projectors, tape recorders)

(1) Main Users:

(a) University College:

Anatomy

Chemistry

English

Extra Mural Studies

Geology

Microbiology

Physiology

Psychology

Pure and Applied Mathematics

Societies (Students' Union)

Sociology

Student Projects (Education Department - Communications Course)

Students' Advisory Centre

Theology

(b) Elsewhere:

Cardiff College of Art

Glamorgan College of Education

(11) Occasional Users:

Archaeology

Civil and Structural Engineering

Computer Centre

Mineral Exploitation

Hispanic Studies

Zoology

(4) Materials and Services (Photographic e,g. slide making and sound recording)

(1) Within the University College:

Education

Computer Centre

Drama

Music (Concert recordings)

Social Studies (Conference recordings)

Applied Mathematics (Conference recordings)

All Language Departments (Sound dubs and recordings)

Electronic and Electrical Engineering

Mechanical and Civil Engineering

English

French

Journalism

Mineral Exploitation

Physiology

Psychology

(11) Elsewhere:

U. W. I. S. T. Applied Biology

W. N. S. M. Social Medicine

Colleges of Education Caerleon, Cardiff, Glamorgan, Llandaf

(5) Short Courses:

(1) Within the University College:

(a) Staff:

Faculty of Arts

Course for newly appointed members of University staff (55)

Education (20)

Biochemistry

Microbiology

(b) Students:

Education (600+)

Extra Mural : two courses on Photography (30)

Journalism (16)

(11) Elsewhere:

All Colleges (C. C. T. V. Technicians Course)

Faculty of Education Aberystwyth

Weekend course for teachers at Haverfordwest (150)

Newport L. E. A. - Teachers' Centre (50)

Course for newly appointed staff.

(6) Films:

Requests for film production have been slow to arise and the Centre has been able to work up its unit in making two films on a ~~film~~ ever plus basis ~~east~~ for the Schools Council in Wales on the teaching of Environmental Studies. In current production is a 35 minute film for the University College on its history and current activities. This is now in its final stages.

(7) Bulk Purchase Scheme:

The bulk purchase of consumables spares and equipment has enabled the Centre to negotiate substantial discounts ranging from 50% on video tapes to 14% on films. This has been passed on to departments where purchases are currently running at the rate of £3,000 a year.

(8) Research activities:

As yet there has been little of the expected demand for evaluation services. At the request of the department of Education the Centre has conducted a large scale investigation into the related merits of Television and Radiovision in the teaching of Mathematics at the upper end of the primary school and the lower end of the secondary school. This investigation involving twenty schools, the B. B. C., the Computer Centre, and local illustrators, has now been completed and the results are being written up. The design of this investigation will provide a useful pattern for future evaluative studies in the audio-visual field.

(9) Current Projects:

Not included in the above are:

(1) a project for the production of case studies for the Department of Sociology (C. C. T. V.)

(2) a project for the production of case studies for four short 8mm. films for teaching audio-visual aids.

one 16mm. film showing the development of the Sherman Theatre.

General Practice Unit of the School of Medicine. (C. C. T. V.)

(3) The appointment of an I. T. A. School Master Fellow due to take up his appointment in April 1971.

(4) A C. C. T. V. production course - on demand by the School of Medicine

AHMADU BELLO UNIVERSITY, ZARIA.
Office of the Vice-Chancellor.

EDUCATIONAL TECHNOLOGY CENTRE

At a recent meeting of the Audio-Visual Advisory Committee, some resolutions that would radically affect the future of the facility were taken. The Institute and Faculty of Education who are not only "facility" but academic users as well have expressed some concern (not necessarily disagreement) about the resolutions and suggested a closer look at the problem.

On 14th June, 1971, the Ag. Director, Institute of Education, Ag. Head of the Department of Education, the Professor of Adult Education and the Vice-Chancellor met on the issue . Full and frank discussions were held and recommendations made.

Historically, the Audio-Visual facility was established as the A.-V Section of the Department of Education. The equipment provision, Senior (5) and intermediate staff training provided by the USAID was specifically assistance to the Department of Education, After October 1968 when the man in charge of the section went to the United States for further education, there was some difficulty in the administration of the Unit. As a result two measures were undertaken administratively:-

1. An Audio-Visual Advisory Committee was constituted by the VCAC, to report to that body and
ii. The Unit was transferred temporarily to the Institute of Education where better supervision at that time was available.

During the 1969/70 Law revision exercise the Committee structure of the University was also reviewed, and the A-V Advisory Committee was required to report to the Director Institute of Education, the Senate and the Council where appropriate.

The meeting agreed that there were two main functions of the facility and a less important third:-

1. Educational (Instructional) Technology as an academic discipline within the programmes of the Faculty and Institute of Education and for Adult Education. This may be both in and out of the University Campuses.

2. A service to the Teaching functions of the University and

3. Service for extra curricula activities of clubs, societies etc both inside and outside the University.

With these in mind the meeting agreed that the best set up for the Unit should be as structured below:
i. That it be entirely independent of any existing establishment within the University, and become a self-contained organisation like the University Library, with its own independent premises, staffing and budget.

ii. That its Advisory Committee should be constituted similar to the Library Committee with appropriate terms of reference.

The meeting felt that the name Audio-visual unit is not adequate, particularly as a lot of teaching materials would be produced by it. e g. Photographs, transparencies, graphics, etc. It was agreed to suggest the name - Educational Technology Centre as being more comprehensive. It was also agreed to recommend the following minimum establishment.

(a) Head of Unit (up to Professorial Status) who should be an educationist - specialising in Instructional Technology.

(b) An Assistant to the above of up to Senior Lecturer Status with similar educational background.

(c) Graphic Artist.

(d) Technician-operator.

It is not likely that there would be separate premises available for some time to come and the Centre would have to continue to be accommodated partly by the Faculty of Education and partly by the Institute of Education.

The recommendation to be set up as an independent Unit tallys with the resolutions of the Audio-visual Advisory Committee. The problem that is posed is essentially one of getting suitable staff, and Technical Assistance sources would be looked into in the first instance.

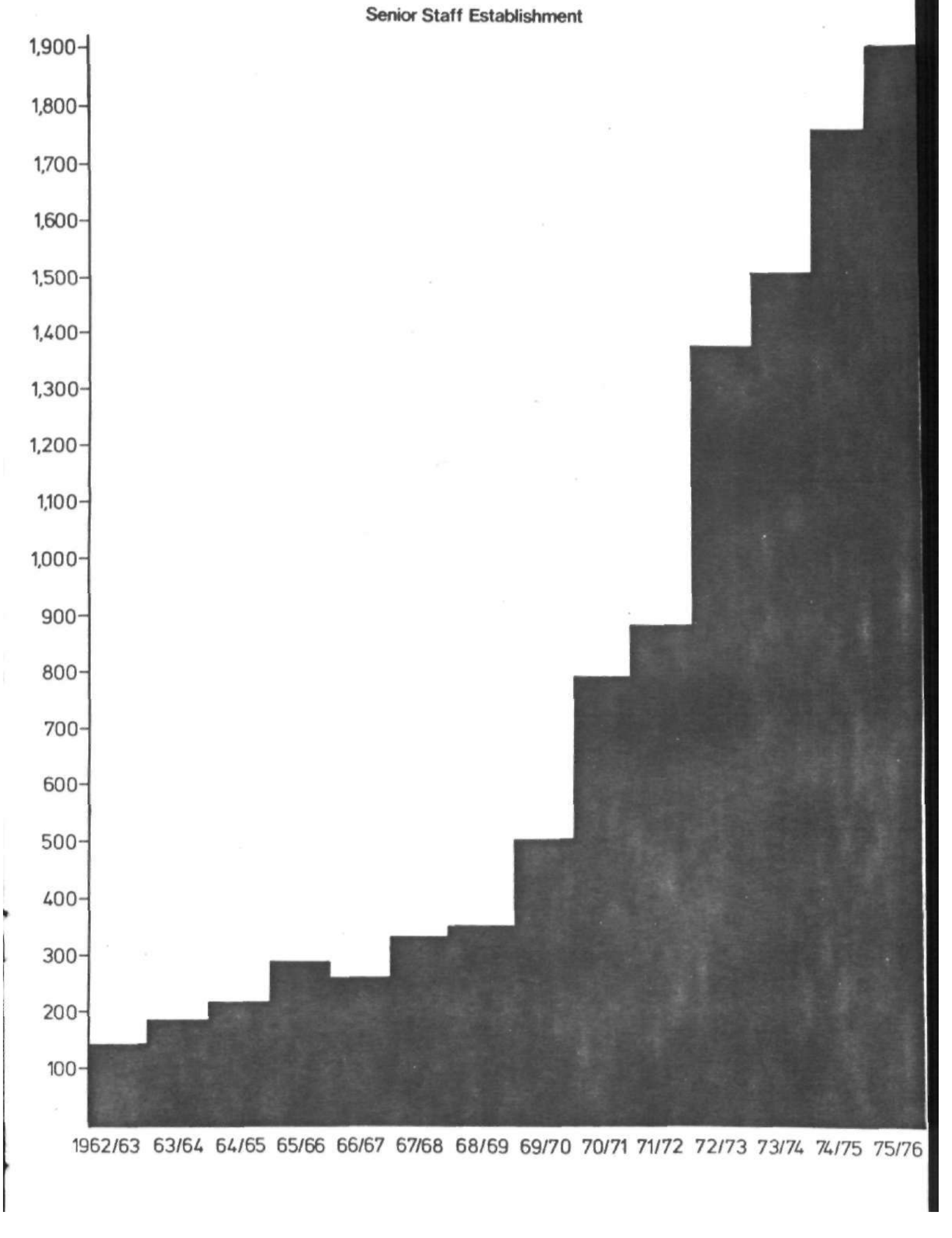
VICE CHANCELLOR.

Ahmadu Bello University, Zaria

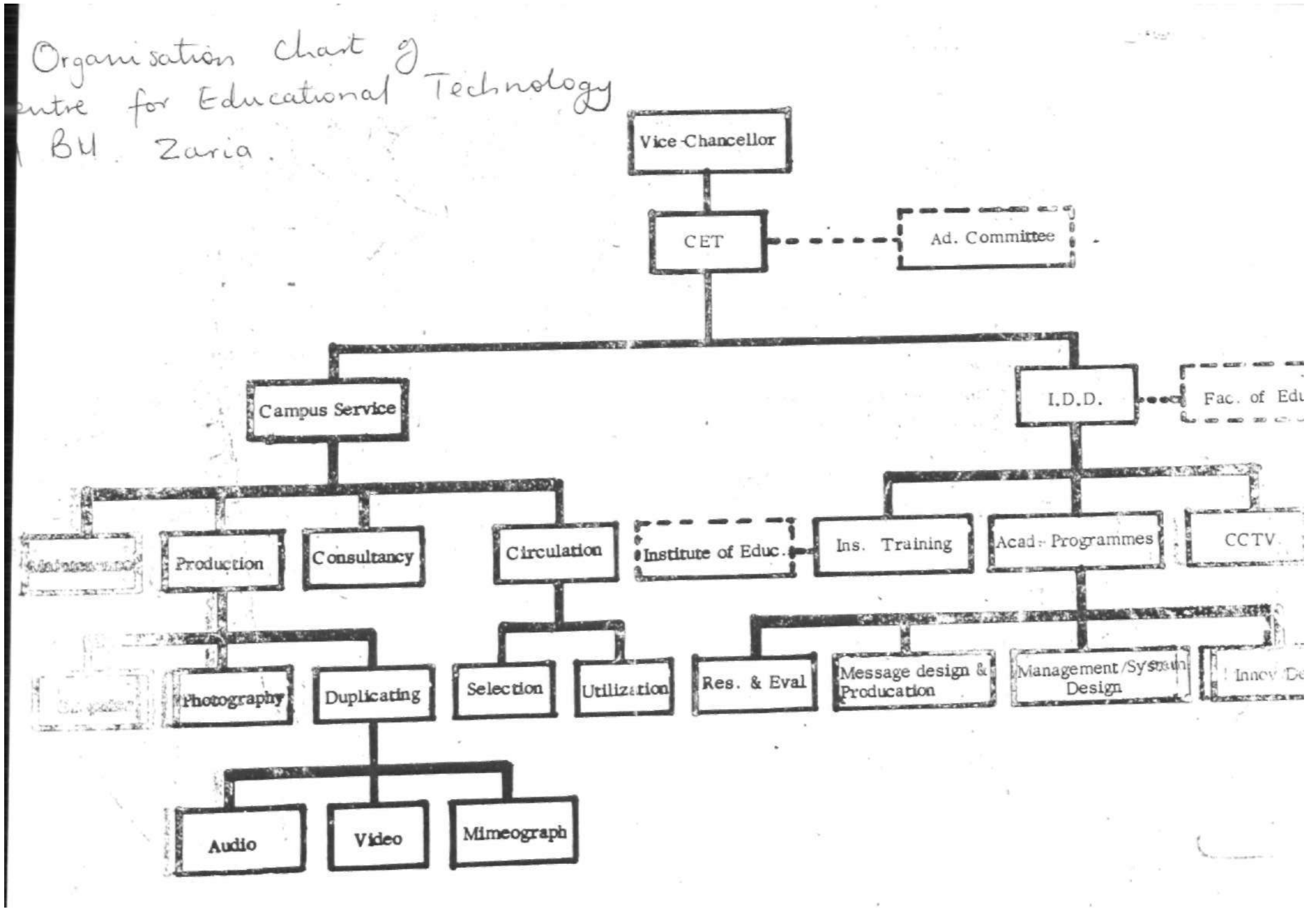
Historical Growth

Total student enrolments per faculty 1962/63 – 1975/76

Session	62/63	63/64	64/65	65/66	66/67	67/68	68/69	69/70	70/71	71/72	72/73	73/74	74/75	75/76
Administration	39	63	106	116	145	135	151	161	167	301	471	525	589	641
Agriculture	5	10	24	54	64	69	65	72	51	77	98	136	159	210
Environmental Design	67	75	76	87	46	52	61	85	96	102	147	186	212	302
Arts & Isl. Studies	—	50	37	72	37	119	132	288	423	622	714	853	968	300
Arts & Soc. Sciences	159	166	188	231	246	358	479	591	604	717	829	973	1,162	1,403
Education	—	—	—	—	—	—	20	51	110	244	400	641	925	1,266
Engineering	134	129	177	216	152	227	319	330	378	373	397	421	396	389
Law	9	14	33	52	47	55	71	79	87	227	317	340	387	686
Medicine	—	—	—	—	—	46	86	140	168	225	284	316	344	367
Science	12	51	77	131	146	241	266	373	368	388	333	382	505	574
Vetinary Medicine	—	—	1	17	31	64	95	123	122	126	139	192	191	213
S.B.S.	—	—	—	—	—	—	—	58	216	324	923	1,085	894	860
Total Enrolments	425	558	719	956	914	1,366	1,745	2,351	2,820	3,840	5,052	6,050	6,742	7,651


Senior Staff Establishment
1,900
1,800
1,700
1,600
1,500
1,400
1,300
1,200
1,100
1,000
900
800
700
600
500
400
300
200
100
1962/63
63/64
64/65
65/66
66/67
67/68
68/69
69/70
70/71
71/72
72/73
73/74
74/75
75/76

Organisation Chart of
entre for Educational Technology
BU Zaria.



Appendix IV

FACULTY OF EDUCATION.

UNIVERSITY COLLEGE,

CARDIFF, WALES.

November 1976.

To All Senior Staff,
A.B.U.
Samaru-Zaria,
NIGERIA.

Dear Colleague,

My name is Sunday Owuna and I am a staff member of the Educational Technology Centre in A.B.U., at present on leave of absence while completing a higher degree in the United Kingdom.

As part of my work here I am preparing a dissertation on the development of educational technology in universities, with specific reference to A.B.U. In order to complete this work to my own satisfaction I need your assistance. Rather than produce a theoretical model relating to educational technology, I would like to have your own reactions to certain ideas on the development of an ed. tech. centre at A.B.U. These ideas can then be incorporated into my dissertation and, hopefully, the final product might be very useful to A.B.U.

Please could you help me in this work by completing the attached questionnaire and returning it to Professor Baikie in the Faculty of Education. (Professor Baikie has agreed to collect all of the questionnaires and return them to me in Cardiff).

I would like to assure you that all information received will be treated in the strictest confidence. Only overall results will be included in the final report, not the individual reactions of faculty members.

Thank you for your help which hopefully will be of benefit to A.B.U. in the long term.

Yours sincerely,



SENIOR STAFF QUESTIONNAIRE

The development of Educational Technology at Ahmadu Bello University.

(The Type of Educational Technology staff members want)

Before completing the questionnaire would you please complete the following personal information.

1.00 NAME:-

1.02 DEPARTMENT:

1.03 POSITION:

- Professor ☐
- Reader ☐
- Senior Lecturer ☐
- Lecturer ☐
- Ass. Lecturer ☐

1.04 For how long have you been on the staff of the A.B.U.?

0-2 years ☐ 3-5 years ☐ More than 5 years ☐

1.05 Is your appointment tenure or contract ?

Tenure ☐ Contract ☐

1.06 What University degrees do you hold?

.....Ph.D or equivalent .....Working on Ph.D.

.....MA or working on it .....B.A.

.....None.

Below are a number of statements of opinion on some types of Educational Technology Centres. In each case indicate by ringing the appropriate letters, how much you agree with, or disagree with the statement.

Use the following key:-

SA - If you strongly agree with the statement

A - If you agree on the whole

N - If you can't decide, or if you think the question is worded in a way you can't answer.

D - If you disagree on the whole.

SD - If you strongly disagree with the statement.

/cont'd....

2.00 POSITION

The Educational Technology Centre should occupy a central position on the main Campus. SA A N D SD

01 The Educational Technology Centre should be part of the main library. SA A N D SD

02 The Centre should be a self-contained building. SA A N D SD

3.00 ADMINISTRATION

03 The E.T.C. should be an independent body as all other departments. SA A N D SD

04 The Main Library should decide and control all administration of the Ed.Tech.Centre. SA A N D SD

05 The Centre should form part of the Faculty of Education and administratively control from there SA A N D SD

06 The Centre should belong to the Institute of Education and be responsible to it. SA A N D SD

07 The E.T.C. should be part of the I.R.L.S. in the Insitute of Agricultural Research Liason Services Section. SA A N D SD

08 The Audio-Visual Committee should be responsible for the Centre's Administration. SA A N D SD

09 All users of the services of the E.T.C. should form a User's Committee that will take charge of the administration of the Centre SA A N D SD

10 E.T.C. should be responsible to the Vice-Chancellor. SA A N D SD

4.00 FINANCE

11 The centre should be provided with a recurrent and capital budget for all its materials. SA A N D SD

12 E.T.C. should not have any budget as such. It should be provided with money for all services requested, the limiting factor for not offering services being production time. SA A N D SD

13 The E.T.C. should charge consumer departments for the cost price of materials only. (e.g. audiotapes, slides etc.,) SA A N D S

/cont'd....

4.14	The Educational Technology Centre should charge consumer departments for materials and services(e.g. technician time on repairs)	SA	A	N	D	SD
.15	The Centre should be maintained at a level equivalent to 2% of the total A.B.U. budget.	SA	A	N	D	SD
5.00	SERVICES					
.16	The E.T.C. should produce slides	SA	A	N	D	SD
.17	The E.T.C. should produce overhead projection transparencies	SA	A	N	D	SD
.18	The Centre should produce 8mm film	SA	A	N	D	SD
.19	The Centre should produce 16mm film	SA	A	N	D	SD
.20	The E.T.C. should produce videotapes	SA	A	N	D	SD
.21	The Centre should produce audio tapes	SA	A	N	D	SD
.22	The E.T.C. should produce self-instructional teaching texts.	SA	A	N	D	SD
.23	The Centre should produce tape-slide programmes	SA	A	N	D	SD
.24	The Centre should loan projection equipment	SA	A	N	D	SD
.25	The E.T.C. should service projection equipment	SA	A	N	D	SD
.26	E.T.C. should operate a centralised campus photographic service for reasons of economy	SA	A	N	D	SD
.27	E.T.C. should operate a centralised campus-wide maintenance of A.V. equipment service for reasons of economy	SA	A	N	D	SD
.28	E.T.C. should operate a centralised purchase system for A/V equipment and materials for reasons of economy and for standardisation	SA	A	N	D	SD
.29	The Centre should offer a centralised graphic production service	SA	A	N	D	SD
.30	The Centre should offer a course design and consultancy services	SA	A	N	D	SD
.31	The Centre should offer a centralised reprographic service with Xerox machines	SA	A	N	D	SD
.32	E.T.C. should maintain all teaching equipment (p.a. systems etc) in the public lecture theatres on the campus.	SA	A	N	D	SD
6.00	FUTURE DEVELOPMENTS					
33	The E.T.C. should play an active role in designing and presenting courses on the use of A/V facilities	SA	A	N	D	SD

6.3 E.T.C. should offer all of its services to schools and colleges in the 10 Northern States SA A N D SD

3 E.T.C. should participate more actively in National Audio visual Association (NAVA) conferences, Nigerian Universities Curriculum Development Conferences etc. SA A N D SD

E.T.C. should provide courses leading to the award of degrees and diplomas like other teaching departments. SA A N D SD

7.00 If you have any other views or comments to make with regard to the development of the Educational Technology Centre at A.B.U., I would be most grateful.

Thank you for your valuable co-operation and comments.

FILE EDTECH (CREATION DATE = 14/02/77)

1

* * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V104 HOW LONG IN A.B.U
* PAGE 1 OF

V102	V104	0-2 YRS	3-5 YRS	OVER 5YRS	ROW TOTAL
	COUNT	1.00	2.00	3.00	
1.00	ROW PCT	26.3	63.2	10.5	35.2
EDUCATION	COL PCT	31.3	66.7	10.0	
	TOT PCT	9.3	22.2	3.7	
2.00	ROW PCT	26.1	17.4	56.5	42.6
SCIENCES	COL PCT	37.5	22.2	65.0	
	TOT PCT	11.1	7.4	24.1	
3.00	ROW PCT	41.7	16.7	41.7	22.2
SOC SCIENCES	COL PCT	31.3	11.1	25.0	
	TOT PCT	9.3	3.7	9.3	
COLUMN TOTAL		16	18	20	54
		29.6	33.3	37.0	100.0

CHI SQUARE = 14.01099 WITH 4 DEGREES OF FREEDOM SIGNIFICANCE = 0.0056
CRAMER'S V = 0.36781
CONTINGENCY COEFFICIENT = 0.46147
KENDALL'S TAU B = 0.12678 SIGNIFICANCE = 0.0830
KENDALL'S TAU C = 0.12449 SIGNIFICANCE = 0.0875
GAMMA = 0.17926
SOMER'S D = 0.12500

NUMBER OF MISSING OBSERVATIONS = 10

* * * * * * * * * * * * * * * * * * * CROSSTABULATION OF * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V103 POSITION
* PAGE 10

V102	V103	SENIOR STAFF (1.00)	JUNIOR STAFF (2.00)	ROW TOTAL
1.00	COUNT	6	12	18
EDUCATION	ROW PCT	33.3	66.7	34.6
	COL PCT	22.2	48.0	
	TOT PCT	11.5	23.1	
2.00	COUNT	15	7	22
SCIENCES	ROW PCT	68.2	31.8	42.3
	COL PCT	55.6	28.0	
	TOT PCT	28.8	13.5	
3.00	COUNT	6	6	12
SOC SCIENCES	ROW PCT	50.0	50.0	23.1
	COL PCT	22.2	24.0	
	TOT PCT	11.5	11.5	
COLUMN TOTAL		27 51.9	25 48.1	52 100.0

CHI SQUARE = 4.83932 WITH 2 DEGREES OF FREEDOM **SIGNIFICANCE = 0.0890**
CRAMER'S V = 0.30506
CONTINGENCY COEFFICIENT = 0.29179
KENDALL'S TAU B = -0.18386 SIGNIFICANCE = 0.0400
KENDALL'S TAU C = -0.18039 SIGNIFICANCE = 0.0232
GAMMA = -0.27273
SOMER'S D = -0.18007

NUMBER OF MISSING OBSERVATIONS = 12

FILE EDTECH (CREATION DATE = 14/02/77)

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* * * * * * * * * * * * * * * * * *  C R O S S T A B U L A T I O N   O F  * * * * * * * * * * * * * * * * *
   V102     DEPARTMENT                           BY  V516      ETC SHOULD PRODUCE SLIDES
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  PAGE  1 OF

                    V516
          COUNT   I
        ROW PCT  IAGREE        ROW
        COL PCT  I             TOTAL
        TOT PCT  I     4.00I
V102    ---------I---------I
           1.00  I     19  I     19
  EDUCATION      I  100.0  I   35.2
                 I   35.2  I
                 I   35.2  I
                 -I--------I
           2.00  I     23  I     23
  SCIENCES       I  100.0  I   42.6
                 I   42.6  I
                 I   42.6  I
                 -I--------I
           3.00  I     12  I     12
  SOC SCIENCES   I  100.0  I   22.2
                 I   22.2  I
                 I   22.2  I
                 -I--------I
         COLUMN        54        54
          TOTAL     100.0     100.0

NUMBER OF MISSING OBSERVATIONS =       10
```

RUN FOR SUNDAY DUDEK 24/02/77 PAGE 22

FILE EDTECH (CREATION DATE = 14/02/77)

* C R O S S T A B U L A T I O N O F *
V102 DEPARTMENT BY V517 ETC SHOULD PRODUCE OP TRANSPRNTS
* PAGE 1 OF

V517

V102	COUNT / ROW PCT / COL PCT / TOT PCT	REJECT	AGREE	ROW TOTAL
EDUCATION	1.00	0	18	18
		0.0	100.0	35.3
		0.0	36.0	
		0.0	35.3	
SCIENCES	2.00	22	0	22
		100.0	0.0	43.1
		44.0	0.0	
		43.1	0.0	
SOC SCIENCES	3.00	1	10	11
		9.1	90.9	21.6
		2.0	19.6	
		2.0	98.0	100.0
COLUMN TOTAL		1	50	51
		2.0	98.0	100.0

CHI SQUARE = 3.70909 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.1565
CRAMER'S V = 0.26968
CONTINGENCY COEFFICIENT = 0.26038
KENDALL'S TAU B = -0.19565 SIGNIFICANCE = 0.0192
KENDALL'S TAU C = -0.06151 SIGNIFICANCE = 0.2576
GAMMA = -1.00000
SOMER'S D = -0.60000

NUMBER OF MISSING OBSERVATIONS = 13

FILE EDTECH (CREATION DATE = 14/02/77)

5

* * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V518 ETC SHOULD PRODUCE 8MM FILM
* PAGE 1 0

	V518		
COUNT / ROW PCT / COL PCT / TOT PCT	REJECT 2.00	AGREE 4.00	ROW TOTAL
V102 1.00 EDUCATION	0 / 0.0 / 0.0 / 0.0	17 / 100.0 / 39.5 / 37.8	17 / 37.8
2.00 SCIENCES	1 / 5.6 / 50.0 / 2.2	17 / 94.4 / 39.5 / 37.8	18 / 40.0
3.00 SOC SCIENCES	1 / 10.0 / 50.0 / 2.2	9 / 90.0 / 20.9 / 20.0	10 / 22.2
COLUMN TOTAL	2 / 4.4	43 / 95.6	45 / 100.0

CHI SQUARE = 1.56977 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.4562
CRAMER'S V = 0.18677
CONTINGENCY COEFFICIENT = 0.18360
KENDALL'S TAU B = -0.17683 SIGNIFICANCE = 0.0397
KENDALL'S TAU C = -0.08296 SIGNIFICANCE = 0.2052
GAMMA = -0.70300
SOMER'S D = -0.48837

NUMBER OF MISSING OBSERVATIONS = 19

FILE EDTECH (CREATION DATE = 14/02/77)

6

* * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V519 ETC SHOULD PRODUCE 16MM FILMS
* PAGE 1 OF

V102	COUNT / ROW PCT / COL PCT / TOT PCT	V519: REJECT 2.00	AGREE 4.00	ROW TOTAL
EDUCATION	1.00	0 0.0 0.0 0.0	18 100.0 42.9 40.9	18 40.9
SCIENCES	2.00	1 5.9 50.0 2.3	16 94.1 38.1 36.4	17 38.6
SOC SCIENCES	3.00	1 11.1 50.0 2.3	8 88.9 19.0 18.2	9 20.5
	COLUMN TOTAL	2 4.5	42 95.5	44 100.0

CHI SQUARE = 1.82135 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.4023
CRAMER'S V = 0.20346
CONTINGENCY COEFFICIENT = 0.19937
KENDALL'S TAU B = -0.19265 SIGNIFICANCE = 0.0294
KENDALL'S TAU C = -0.09091 SIGNIFICANCE = 0.1863
GAMMA = -0.73333
SOMER'S D = -0.52381

NUMBER OF MISSING OBSERVATIONS = 20

7

AY OUGNA
FILE EDTECH (CREATION DATE = 14/02/77)

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V520 ETC SHOULD PRODUCE VIDEOTAPES
* PAGE 1 OF

V102	COUNT / ROW PCT / COL PCT / TOT PCT	V520 AGREE 4.00	ROW TOTAL
EDUCATION	1.00	18 / 100.0 / 42.9 / 42.9	18 / 42.9
SCIENCES	2.00	14 / 100.0 / 33.3 / 33.3	14 / 33.3
SOC SCIENCES	3.00	10 / 100.0 / 23.8 / 23.8	10 / 23.8
COLUMN TOTAL		42 / 100.0	42 / 100.0

NUMBER OF MISSING OBSERVATIONS = 22

FILE EDTECH (CREATION DATE = 14/02/77)

8

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* * * * * * * * * * * * * * * * * *   C R O S S T A B U L A T I O N   O F   * * * * * * * * * * * * * * * * *
    V102      DEPARTMENT                                  BY  V521       CENTR SHLD PRODUCE AUDIOTAPES
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  PAGE  1 OF

                        V521
               COUNT  I
             ROW PCT  IAGREE       ROW
             COL PCT  I            TOTAL
             TOT PCT  I     4.00I
V102         ---------I---------I
               1.00   I    19   I    19
  EDUCATION           I  100.0  I  41.3
                      I   41.3  I
                      I   41.3  I
                     -I---------I
               2.00   I    17   I    17
  SCIENCES            I  100.0  I  37.0
                      I   37.0  I
                      I   37.0  I
                     -I---------I
               3.00   I    10   I    10
  SOC SCIENCES        I  100.0  I  21.7
                      I   21.7  I
                      I   21.7  I
                     -I---------I
              COLUMN       46        46
               TOTAL    100.0     100.0

NUMBER OF MISSING OBSERVATIONS =       18
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9

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FILE   EDTECH    (CREATION DATE = 14/02/77)

* * * * * * * * * * * * * * * * * * *   C R O S S T A B U L A T I O N   O F   * * * * * * * * * * * * * * * * *
   V102        DEPARTMENT                                  BY  V522     SHOULD PRODUCE SELF INSTRUCTIONAL TE
* * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * * *  PAGE  1 OF

                    V522
           COUNT  I
         ROW PCT  IREJECT   AGREE      ROW
         COL PCT  I                    TOTAL
         TOT PCT  I    2.00I    4.00I
V102     --------I--------I--------I
            1.00  I     2  I    15  I    17
  EDUCATION       I  11.8  I  88.2  I  37.0
                  I  33.3  I  37.5  I
                  I   4.3  I  32.6  I
                 -I--------I--------I
            2.00  I     2  I    15  I    17
  SCIENCES        I  11.8  I  88.2  I  37.0
                  I  33.3  I  37.5  I
                  I   4.3  I  32.6  I
                 -I--------I--------I
            3.00  I     2  I    10  I    12
  SOC SCIENCES    I  16.7  I  83.3  I  26.1
                  I  33.3  I  25.0  I
                  I   4.3  I  21.7  I
                 -I--------I--------I
          COLUMN       6       40       46
           TOTAL    13.0     87.0    100.0

CHI SQUARE =      0.18791 WITH   2 DEGREES OF FREEDOM   SIGNIFICANCE =  0.9103
CRAMER'S V =    0.06391
CONTINGENCY COEFFICIENT =    0.06378
KENDALL'S TAU B =   -0.04890  SIGNIFICANCE =  0.3118
KENDALL'S TAU C =   -0.03781  SIGNIFICANCE =  0.3522
GAMMA =   -0.12500
SOMER'S D =   -0.08333

NUMBER OF MISSING OBSERVATIONS =      18
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FILE EDTECH (CREATION DATE = 14/02/77)

10

* C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V523 PRODUCE TAPE SLIDE PROGRAMMES
* PAGE 1 OF

		V523	
	COUNT / ROW PCT / COL PCT / TOT PCT	AGREE 4.60	ROW TOTAL
V102	1.00	15	15
	EDUCATION	100.0	40.5
		40.5	
		40.5	
	2.00	13	13
	SCIENCES	100.0	35.1
		35.1	
		35.1	
	3.00	9	9
	SOC SCIENCES	100.0	24.3
		24.3	
		24.3	
	COLUMN TOTAL	37 100.0	37 100.0

NUMBER OF MISSING OBSERVATIONS = 27

FILE EDTECH (CREATION DATE = 14/02/77)

11

* * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V524 CENTER SHOULD LOAN PROJECTN EQPNNT
* PAGE 1 OF

	V524		
	COUNT / ROW PCT / COL PCT / TOT PCT	REJECT	AGREE	ROW TOTAL
		2.00	4.00	
V102				
1.00 EDUCATION		0	19	19
		0.0	100.0	37.3
		0.0	38.8	
		0.0	37.3	
2.00 SCIENCES		0	20	20
		0.0	100.0	39.2
		0.0	40.8	
		0.0	39.2	
3.00 SOC SCIENCES		2	10	12
		16.7	83.3	23.5
		100.0	20.4	
		3.9	19.6	
COLUMN TOTAL		2 3.9	49 96.1	51 100.0

CHI SQUARE = 6.76536 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.0340
CRAMER'S V = 0.36422
CONTINGENCY COEFFICIENT = 0.34222
KENDALL'S TAU B = -0.27057 SIGNIFICANCE = 0.0021
KENDALL'S TAU C = -0.11995 SIGNIFICANCE = 0.1022
GAMMA = -1.00000
SOMER'S D = -0.79592

NUMBER OF MISSING OBSERVATIONS = 13

FILE EDTECH (CREATION DATE = 14/02/77)

12

* C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V525 CENTRE SHOULD SERVICE PROJECTN EQPTMN
* PAGE 1 OF

		V525		
	COUNT / ROW PCT / COL PCT / TOT PCT	REJECT 2.00	AGREE 4.00	ROW TOTAL
V102				
1.00 EDUCATION		0 0.0 0.0 0.0	18 100.0 37.5 36.7	18 36.7
2.00 SCIENCES		0 0.0 0.0 0.0	20 100.0 41.7 40.8	20 40.8
3.00 SOC SCIENCES		1 9.1 100.0 2.0	10 90.9 20.8 20.4	11 22.4
COLUMN TOTAL		1 2.0	48 98.0	49 100.0

CHI SQUARE = 3.52652 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.1715
CRAMER'S V = 0.26827
CONTINGENCY COEFFICIENT = 0.25911
KENDALL'S TAU B = -0.19864 SIGNIFICANCE = 0.0208
KENDALL'S TAU C = -0.06331 SIGNIFICANCE = 0.2558
GAMMA = -1.00000
SOMER'S D = -0.79167

NUMBER OF MISSING OBSERVATIONS = 15

FILE EDTECH (CREATION DATE = 14/02/77)

13

* C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V526 OPERATE CENTSD CAMPS PHOTO SERVC FOR
* PAGE 1 OF

		V526		
	COUNT / ROW PCT / COL PCT / TOT PCT	REJECT	AGREE	ROW TOTAL
		2.00	4.00	
V102				
	1.00	6	16	16
	EDUCATION	6.0	100.0	33.3
		6.6	36.4	
		6.0	33.3	
	2.00	4	17	21
	SCIENCES	19.0	81.0	43.8
		100.0	38.6	
		8.3	35.4	
	3.00	0	11	11
	SOC SCIENCES	0.0	100.0	22.9
		0.0	25.0	
		0.0	22.9	
	COLUMN TOTAL	4 8.3	44 91.7	48 100.0

CHI SQUARE = 5.01039 WITH 2 DEGREES OF FREEDOM **SIGNIFICANCE = 0.0605**
CRAMER'S V = 0.34188
CONTINGENCY COEFFICIENT = 0.32350
KENDALL'S TAU B = -0.05531 SIGNIFICANCE = 0.2853
KENDALL'S TAU C = -0.03472 SIGNIFICANCE = 0.3609
GAMMA = -0.18519
SOMER'S D = -0.11364

NUMBER OF MISSING OBSERVATIONS = 16

FILE EDTECH (CREATION DATE = 14/02/77)

14

* * * * * * * * * * * * * * * * * * * CROSSTABULATION OF * * * * * * * * * * * * * * * * * * *

V102 DEPARTMENT BY V527 OPERT CENTLSD CAMPS AV MAINTNCE FOR EC

* PAGE 1 OF

V102	V527 AGREE 4.00	ROW TOTAL
1.00 EDUCATION	COUNT 18	18
	ROW PCT 100.0	36.0
	COL PCT 36.0	
	TOT PCT 36.0	
2.00 SCIENCES	COUNT 20	20
	ROW PCT 100.0	40.0
	COL PCT 40.0	
	TOT PCT 40.0	
3.00 SOC SCIENCES	COUNT 12	12
	ROW PCT 100.0	24.0
	COL PCT 24.0	
	TOT PCT 24.0	
COLUMN TOTAL	50	50
	100.0	100.0

NUMBER OF MISSING OBSERVATIONS = 14

FILE EDTECH (CREATION DATE = 14/02/77)

15

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V102 DEPARTMENT BY V528 OPERT CENTLSD AV PURCHACE FOR ECONOM
* PAGE 1 OF

		V528		
	COUNT I			
	ROW PCT I	REJECT	AGREE	ROW
	COL PCT I			TOTAL
	TOT PCT I	2.00I	4.00I	
V102				
	1.00 I	0 I	19 I	19
EDUCATION	I	0.0 I	100.0 I	38.0
	I	0.0 I	41.3 I	
	I	0.0 I	38.0 I	
	2.00 I	3 I	16 I	19
SCIENCES	I	15.8 I	84.2 I	38.0
	I	75.0 I	34.8 I	
	I	6.0 I	32.0 I	
	3.00 I	1 I	11 I	12
SOC SCIENCES	I	8.3 I	91.7 I	24.0
	I	25.0 I	23.9 I	
	I	2.0 I	22.0 I	
COLUMN		4	46	50
TOTAL		8.0	92.0	100.0

CHI SQUARE = 3.22034 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.1999
CRAMER'S V = 0.25379
CONTINGENCY COEFFICIENT = 0.24599
KENDALL'S TAU B = -0.15217 SIGNIFICANCE = 0.0555
KENDALL'S TAU C = -0.09440 SIGNIFICANCE = 0.1614
GAMMA = -0.47206
SOMER'S D = -0.32665

NUMBER OF MISSING OBSERVATIONS = 14

16

FILE EDTECH (CREATION DATE = 14/02/77)

* C R O S S T A B U L A T I O N O F *
V102 DEPARTMENT BY V529 OFFER CENTLSD GRAPHIC PRODN SERVICE
* PAGE 1 OF

V102	V529	2.00	4.00	ROW TOTAL
EDUCATION	1.00	0	17	17
		0.0	100.0	37.0
		0.0	37.8	
		0.0	37.0	
SCIENCES	2.00	0	19	19
		0.0	100.0	41.3
		0.0	42.2	
		0.0	41.3	
SOC SCIENCES	3.00	1	9	10
		10.0	90.0	21.7
		100.0	20.0	
		2.2	19.6	
COLUMN TOTAL		1	45	46
		2.2	97.8	100.0

CHI SQUARE = 3.68000 WITH 2 DEGREES OF FREEDOM SIGNIFICANCE = 0.1588
CRAMER'S V = 0.28284
CONTINGENCY COEFFICIENT = 0.27217
KENDALL'S TAU B = -0.20535 SIGNIFICANCE = 0.0197
KENDALL'S TAU C = -0.00805 SIGNIFICANCE = 0.2473
GAMMA = -1.00000
SOMER'S D = -0.80000

NUMBER OF MISSING OBSERVATIONS = 13

17

FILE EDTECH (CREATION DATE = 14/02/77)

* C R O S S T A B U L A T I O N O F *
V105 APPOINTMENT TENURED OR CONTRACTED BY V105 APPOINTMENT TENURED OR CONTRACTED PAGE 1 OF

V105	COUNT / ROW PCT / COL PCT / TOT PCT	V105 1.00 TENURED	V105 2.00 CONTRACT	ROW TOTAL
1.00 TENURED		40	0	40
		100.0	0.0	62.5
		100.0	0.0	
		62.5	0.0	
2.00 CONTRACT		0	24	24
		0.0	100.0	37.5
		0.0	100.0	
		0.0	37.5	
COLUMN TOTAL		40	24	64
		62.5	37.5	100.0

CORRECTED CHI SQUARE = 59.80441 WITH 1 DEGREE OF FREEDOM SIGNIFICANCE = 0.0000
PHI = 0.96667
CONTINGENCY COEFFICIENT = 0.69502
KENDALL'S TAU B = 1.00000 SIGNIFICANCE = 0.0000
KENDALL'S TAU C = 0.93750 SIGNIFICANCE = 0.0000
GAMMA = 1.00000
SOMER'S D = 1.00000

18

FILE EDTECH (CREATION DATE = 14/02/77)

* C R O S S T A B U L A T I O N O F *
V105 APPOINTMENT TENURED OR CONTRACTED BY V305 ETC SHO BE IN FACEDUC BE ADMSTY CONTL
* PAGE 1 OF

		V305		
	COUNT / ROW PCT / COL PCT / TOT PCT	1.00 REJECT	2.00 AGREE	ROW TOTAL
V105				
TENURED	1.00	10 / 33.3 / 47.6 / 20.0	20 / 66.7 / 69.0 / 40.0	30 / 60.0
CONTRACT	2.00	11 / 55.0 / 52.4 / 22.0	9 / 45.0 / 31.0 / 18.0	20 / 40.0
COLUMN TOTAL		21 / 42.0	29 / 58.0	50 / 100.0

CORRECTED CHI SQUARE = 1.50862 WITH 1 DEGREE OF FREEDOM SIGNIFICANCE = 0.2194
PHI = 0.17370
CONTINGENCY COEFFICIENT = 0.17114
KENDALL'S TAU B = -0.21506 SIGNIFICANCE = 0.0121
KENDALL'S TAU C = -0.20800 SIGNIFICANCE = 0.0147
GAMMA = -0.41935
SOMER'S D = -0.21346

NUMBER OF MISSING OBSERVATIONS = 14

* * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V105 APPOINTMENT TENURED OR CONTRACTED BY V308 AV COMTTEE BE RESPBL FOR ETC ADMINSTN
* PAGE 1 OF

V105 \ V308	REJECT	AGREE	ROW TOTAL
TENURED	17	12	29
	58.6	41.4	72.5
	73.9	70.6	
	42.5	30.0	
CONTRACT	6	5	11
	54.5	45.5	27.5
	26.1	29.4	
	15.0	12.5	
COLUMN TOTAL	23 57.5	17 42.5	40 100.0

CORRECTED CHI SQUARE = 0.01571 WITH 1 DEGREE OF FREEDOM SIGNIFICANCE = 0.9002
PHI = 0.01982
CONTINGENCY COEFFICIENT = 0.01982
KENDALL'S TAU B = 0.03691 SIGNIFICANCE = 0.3655
KENDALL'S TAU C = 0.03250 SIGNIFICANCE = 0.3808
GAMMA = 0.08230
SOMER'S D = 0.03325

NUMBER OF MISSING OBSERVATIONS = 24

20

FILE EDTECH (CREATION DATE = 14/02/77)

* C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * * *
V105 APPOINTMENT TENURED OR CONTRACTED BY V309 USER COMTTEE BE RESPBL ETC ADMINSTN
* PAGE 1 OF

V309

		REJECT	AGREE	ROW TOTAL
V105	COUNT			
	ROW PCT			
	COL PCT			
	TOT PCT	2.0	4.0	
1.00		21	9	30
TENURED		70.0	30.0	61.2
		58.3	69.2	
		42.9	18.4	
2.00		15	4	19
CONTRACT		78.9	21.1	38.8
		41.7	30.8	
		30.6	8.2	
COLUMN TOTAL		36 73.5	13 26.5	49 100.0

CORRECTED CHI SQUARE = 0.12099 WITH 1 DEGREE OF FREEDOM SIGNIFICANCE = 0.7195
PHI = 0.05131
CONTINGENCY COEFFICIENT = 0.05124
KENDALL'S TAU B = -0.00874 SIGNIFICANCE = 0.1539
KENDALL'S TAU C = -0.00846 SIGNIFICANCE = 0.1892
GAMMA = -0.23280
SOMER'S D = -0.10307

NUMBER OF MISSING OBSERVATIONS = 15

* CROSSTABULATION OF *
V105 APPOINTMENT TENURED OR CONTRACTED BY V310 ETC BE RESPONSSIBLE TO THE VC
* PAGE 1 OF

V105	COUNT / ROW PCT / COL PCT / TOT PCT	V310 REJECT (2.00)	V310 AGREE (4.00)	ROW TOTAL
1.00 TENURED		14	16	30
		46.7	53.3	65.2
		77.8	57.1	
		30.4	34.8	
2.00 CONTRACT		4	12	16
		25.0	75.0	34.8
		22.2	42.9	
		8.7	26.1	
COLUMN TOTAL		18	28	46
		39.1	60.9	100.0

CORRECTED CHI SQUARE = 1.24754 WITH 1 DEGREE OF FREEDOM SIGNIFICANCE = 0.2640
PHI = 0.16468
CONTINGENCY COEFFICIENT = 0.16240
KENDALL'S TAU B = 0.21144 SIGNIFICANCE = 0.0169
KENDALL'S TAU C = 0.19600 SIGNIFICANCE = 0.0243
GAMMA = 0.44828
SOMER'S D = 0.20635

NUMBER OF MISSING OBSERVATIONS = 18

		V415		
	COUNT / ROW PCT / COL PCT / TOT PCT	REJECT	AGREE	ROW TOTAL
		1.00	2.00	
V105				
	1.00	7	2	9
TENURED		77.8	22.2	69.2
		77.8	50.0	
		53.8	15.4	
	2.00	2	2	4
CONTRACT		50.0	50.0	30.8
		22.2	50.0	
		15.4	15.4	
	COLUMN TOTAL	9 69.2	4 30.8	13 100.0

FISHER'S EXACT TEST = 0.35385
PHI = 0.27778
CONTINGENCY COEFFICIENT = 0.26764
KENDALL'S TAU B = 0.27778 SIGNIFICANCE = 0.0764
KENDALL'S TAU C = 0.23669 SIGNIFICANCE = 0.1110
GAMMA = 0.55556
SOMER'S D = 0.27778

NUMBER OF MISSING OBSERVATIONS = 51

FILE EDTECH (CREATION DATE = 14/02/77)

* * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * *
V105 APPOINTMENT TENURED OR CONTRACTED BY V634 OFFER SERVICES TO SCHLS IN TO NOR STA
* PAGE 1 OF

V105	COUNT / ROW PCT / COL PCT / TOT PCT	V634 REJECT 2.00	AGREE 4.00	ROW TOTAL
TENURED	1.00	14 45.2 58.3 29.2	17 54.8 70.8 35.4	31 64.6
CONTRACT	2.00	10 58.8 41.7 20.8	7 41.2 29.2 14.6	17 35.4
	COLUMN TOTAL	24 50.0	24 50.0	48 100.0

CORRECTED CHI SQUARE = 0.30433 WITH 1 DEGREE OF FREEDOM SIGNIFICANCE = 0.5461
PHI = 0.08712
CONTINGENCY COEFFICIENT = 0.08679
KENDALL'S TAU B = -0.13008 SIGNIFICANCE = 0.1901
KENDALL'S TAU C = -0.12500 SIGNIFICANCE = 0.0999
GAMMA = -0.26866
SOMER'S D = -0.12500

NUMBER OF MISSING OBSERVATIONS = 10

RUN FOR SUNDAY OTUNA

FILE EDTECH (CREATION DATE = 14/02/77)

* * * * * * * * * * * * * * * * * * * C R O S S T A B U L A T I O N O F * * * * * * * * * * * * * * * * * *
V105 APPOINTMENT TENURED OR CONTRACTED BY V636 PROVIDE DIPLOMAS AND DEGREE COURSES
* PAGE 1 OF

		V636		
	COUNT / ROW PCT / COL PCT / TOT PCT	REJECT 2.00	AGREE 4.00	ROW TOTAL
V105				
TENURED	1.00	16	15	31
		51.6	48.4	60.0
		72.7	60.0	
		34.0	31.9	
CONTRACT	2.00	6	10	16
		37.5	62.5	34.0
		27.3	40.0	
		12.8	21.3	
COLUMN TOTAL		22	25	47
		46.8	53.2	100.0

CORRECTED CHI SQUARE = 0.37253 WITH 1 DEGREE OF FREEDOM SIGNIFICANCE = 0.5416
PHI = 0.08903
CONTINGENCY COEFFICIENT = 0.08868
KENDALL'S TAU B = 0.13402 SIGNIFICANCE = 0.0869
KENDALL'S TAU C = 0.12675 SIGNIFICANCE = 0.0992
GAMMA = 0.28000
SOMER'S D = 0.12727

NUMBER OF MISSING OBSERVATIONS = 17

***** GIVEN SPACE ALLOWS FOR 1999 CELLS AND 2 DIMENSIONS FOR CROSSTABS *****

FINISH

FILE NOWAVE (CREATION DATE = 08/02/77)

VARIABLE V102 DEPARTMENT

CODE			
1.00	**********	(12)	18.8 PCT
	EDUCATION		
2.00	******	(1)	1.6 PCT
	EDU.TECH		
3.00	**********	(6)	9.4 PCT
	INSTEDUC		
4.00	**********	(3)	4.7 PCT
	MILITARY		
5.00	**********	(2)	3.1 PCT
	COMPUTER		
6.00	**********	(3)	4.7 PCT
	BIOLSCNC		
7.00	******	(1)	1.6 PCT
	CHEMSTRY		
8.00	**********	(7)	10.9 PCT
	METHED		
9.00	**********	(6)	9.4 PCT
	AGRIC		
10.00	**********	(6)	9.4 PCT
	ENGINEERG		
11.00	**********	(4)	6.3 PCT

```
        11.00  ********************* (     4)   5.3 PCT
               I    LANGUAGE
               I
               I
        12.00  ********************* (     4)   5.3 PCT
               I    PARTARCH
               I
               I
        13.00  ****** (     1)   1.6 PCT
               I    GEOGRPHY
               I
               I
        14.00  *********** (     2)   3.1 PCT
               I    SOCIOLGY
               I
               I
        15.00  ****** (     1)   1.6 PCT
               I    POLITSC
               I
               I
         0.00  ************************** (     5)   7.8 PCT
    (MISSING)  I    MISSING
               I
               I.........I.........I.........I.........I.........I.........I.........I.........I.........I.....
               0         2         4         6         8         10        12        14        16        18
               FREQUENCY
```

STATISTICS..

MEAN	6.720	STD ERROR	0.550	MEDIAN	7.714
MODE	1.000	STD DEV	4.222	VARIANCE	17.822
KURTOSIS	-1.241	SKEWNESS	0.006	RANGE	14.000
MINIMUM	1.000	MAXIMUM	15.000		

VALID OBSERVATIONS - 59
MISSING OBSERVATIONS - 5