APPENDIX A : THE BOOK PRODUCTION AND MATERIAL RESOURCES UNIT IN THE GAMBIA

ORIGINS AND DEVELOPMENT: 1973 TO 1978

The present Book Production and Material Resources Unit of the Ministry of Education began with a different title, in a different place and with a much narrower objective.

In late 1973, the material available to back up the course of training for primary teachers conducted in Yundum College (now Gambia College) left a great deal to be desired. Textbooks were scarce and most of those that were available were not really suitable. Certain pieces of audio, visual and audio-visual equipment were available, but rarely, if ever, used. There were no slide sets, no OVH transparencies, only a very few (rather battered) picture sets for wall display, and certainly no gramophone records or cassette tapes.

It was against this background of need that we decided to set up a College Resources Centre. Several problems had to be overcome. First we had to find a place in which to set up the centre. As only one small room was available we had little choice. Second, no suitable furniture was available. The answer was found in a number of sturdy packing cases in the College store, together with one or two sheets of hardboard in more or less good condition.

We were now ready to move the equipment into its new home. This did not take long as all we had was one old and battered rotary ink duplicator, a manual typewriter of similar age and condition, a slide-type rotary trimmer, a desk-type hand stapling machine, a pencil sharpener, a small paper punch, a tool for inserting eyelets (not in great demand!), an assortment of blackboard instruments, and a small stock

of paper and duplicating ink. As for the staff, it consisted of only three people: the manager who served also as reprographic technician, the Principal's secretary as compositor, with the Principal himself providing graphic art work and photography. All three combined for the finishing stage of collating, stapling and trimming. It was not possible to provide any full-time staff as the three persons involved had their normal duties to perform. This meant that the bulk of resources work had to be done after working hours.

By mid-1975, the Yundum College Resources Centre was functioning well and had a modest list of publications to its credit; all short runs of around 50 to 100 copies of small booklets and sets of single sheet illustrations. The belief that the need was there had been vindicated and demand was growing.

There was clear indication that the closer a finished piece of work approximated to a commercial standard, the more value and confidence both lecturers and students placed in it. An imaginative and appropriate cover design on coloured card, a balanced, professional looking layout of headings and text, justified type and clear uniformly inked printed copy all helped to promote the belief that the home-grown product really could offer a viable alternative to the commercial equivalent.

The time had arrived to do something about the equipment. Four new items were procured: a new and somewhat more versatile rotary ink duplicator which would use coloured inks without our having to clean the rollers each time; an electronic stencil cutter (or scanner) to meet the growing demand for single sheet illustrations and work-cards; a golfball typewriter; and a small electric stapling machine. The improvement was immediately apparent. But when the scanner was put to use we found we needed one other piece of equipment. This was a light box, needed for spotting out pinholes in scanned stencils before they were run on the duplicator. As no funds were available we took a piece of glass out of an old window frame and made the box to hold it in the College woodwork shop, using various remnants. An old lamp-holder (bayonet fitting) was installed, a sheet of tracing paper acted as a diffuser, and we had a light box

made entirely from scrap material (except for the lamp). It is still in use in the present Book Production and Material Resources Unit.

Throughout 1977, consolidation and a steady improvement in technique was the major theme. We had come a long way since the first ideas of 1973. The centre now handled all procurement for the academic side of the College. The stock of raw material (paper, card, etc.), although not lavish, was adequate, and the number of non-book resource items had increased. There was an excellent requisitioning, issuing and retrieval system. The quality of production had reached a high level, demonstrating what could be achieved with scanning and duplicating equipment. Our success was due not only to good typesetting and good printing, it was also dependent on the infant graphics section. The introduction of "rub-on" lettering gave an added dimension to headings and cover layout, while the facility of the electric typewriter to change type faces was a further refinement. Our cover designs, layout, diagrams, illustrations and so on, impressed everyone.

THE PERIOD OF EXPANSION: 1978 TO 1982

In 1978, the decision was taken to move the unit from the College to its own premises in Banjul and set it up as a separate entity called the Book Production and Material Resources Unit (BPMRU). At first there was no formal staff establishment in the Government Estimates; in effect the Unit did not exist! All staff (there were four) were seconded on a full-time basis. This situation was both a hindrance and a help. A hindrance, because if we did not exist with an official staff there could be no official vote for funding the Unit. A help, because we were not forced to accept unsuitable people in order to fill officially-established posts that could not be left vacant for long. However, as we had to build a staff, a useful expedient was found whereby we could select the people we wanted and have the means to employ them. They were employed as temporary unqualified teachers and seconded to the Unit.

For the sort of work we had to undertake no pool of trained personnel was available. In order to continue the idea of full commitment and hard work established in the former College Resources Centre, we knew we would have to select our staff with the utmost care and then mould them into a committed team. We decided not to take people who had already been in employment where they might have picked up bad work habits. Instead we looked towards those who had recently left secondary school or were about to do so. In this way we also satisfied another of our requirements, which was a minimum of four GCE O-level passes including certain specific subjects.

So a search of the Secondary High Schools began. We were looking for recruits who had attained our minimum educational requirement, who showed an interest in the sort of work we were offering, and who had the potential to absorb further training.

We needed people for training as graphic artists, as editors, and as compositors. From the schools' art departments came our future graphic section personnel; from the commercial classes we selected the best typists we could find; while from the ranks of those who had achieved high-level passes in English and other languages we drew our embryo editors.

For certain senior posts we looked to the teaching profession. The Chief Editor's post, for example, required a mature person with a good academic background, a teaching qualification and wide teaching experience. In the equipment maintenance area we sought two teachers from the secondary technical schools; one with a background of electronics, the other trained in the basics of mechanical engineering. Those to be trained as offset press operators and for finishing and binding work we selected from secondary technical school leavers.

These people were not all recruited at the same time. The process took over two years; but by 1981 it was more or less complete. All the recruits had to serve a probationary year in order to give them time to be sure that they really wanted to do the type of work in which they were involved. It also enabled us to evaluate their suitability. Once they had reached a sufficiently high standard on the in-

house, on-the-job training programmes, efforts would be made to secure funding to send them for formal training abroad so that they could obtain recognised qualifications in their special field of work.

By the end of 1979 it became clear that if our trainees were to reach the high standard envisaged, we would need some outside expertise for some aspects of our in-house training programme. As our funding was (and is) limited, we approached various agencies responsible for voluntary service overseas. One of them generously provided people trained and experienced in graphic arts, printing and finishing. We also managed to squeeze enough out of our own funds to employ on a part-time basis an excellent local typing instructor who put our trainee compositors through the advanced stage of the examination of an international typing institution. More recently, in the same way, we have employed on local terms an expert in typography and composition who we hope will turn our advanced typists into typographers capable of producing copy of a high standard.

So that our personnel can work full-time on the production schedule, we set aside Saturday mornings for the formal in-house training programme.

The decision to remove the Unit from the College and set it up as a separate entity resulted in more rapid growth than would otherwise have been the case. This meant that we had to think again about the choice of equipment. To rely entirely on the sort we already possessed would mean limiting our work to a fairly narrow field. On the other hand, to invest in equipment beyond our in-house training capacity and maintenance ability would be to invite problems. We decided to set up a set of guidelines against which we could measure our requirements. Our list eventually came to something like this:

Will the equipment have the capacity to handle the projected production level for (say) the next five years?

Is the operating skill required simple and easy to teach to totally unskilled personnel?

Is the equipment sturdy enough to stand up to the handling

of trainees while at the same time functioning as a piece of full-time production equipment?

Can we do most of the maintenance likely to be required?

Are spares readily available and reasonably priced?

Two other points were also considered. First, so that we could purchase all machine supplies in the cheapest possible market, we avoided any equipment for which supplies (e.g. inks, fountain solution, etch, plates, etc.) could be purchased only from the manufacturer of the machine. This gave us the opportunity to shop around for quality goods. Second, we thought it would be best to deal with as few manufacturers as possible, provided they could supply what we wanted at the right price. By standardising ouf equipment in this way we could save on administrative costs and - even more importantly - on the range of spare parts we would have to keep in stock.

If standardisation of equipment is necessary, so is compatibility between the function of one machine and another. For instance, it is necessary to choose a platemaker that can be used with any of the formats that the printing presses can handle. The same principle applies to collating equipment. If much of the production is to be centre-fold A5 books (i.e. folded A4), it is best to obtain collate/stitch/fold equipment where all the operations are carried out by one machine. To collate on one machine (or by hand) and then fold on another and stitch on a third can be very inefficient when producing long print runs of (say) 10,000 copies or more. Another example concerns lamination. The laminator must be able to handle all the formats that you are likely to use. Yet another is the photographic equipment. If you are going to use hard-dot or half-tone screens it is important that they are within the range of the plate material and the platemaker to handle successfully.

By proceeding in this manner, the Unit slowly acquired a sound basic range of equipment. We made mistakes of course, but fortunately none that could be considered as expensive disasters! Naturally, we have not got all the equipment

we would like, but at the moment we have enough for our needs and are adding to our range as the opportunity arises.

Although the organisation and management of the present Unit is more complex than that of the old Yundum College Resources Centre, the groundwork done at that time has proved capable of smooth expansion. Today the Unit is organised into seven sections - editing, composing, graphics, printing, procurement, finishing and maintenance. Each section has a senior person or supervisor responsible to the Director for its efficiency and smooth running. The personnel within each section must not only be proficient in the work involved, they must also have at least a working knowledge of the processes found in the other sections. Thus the staff in the graphics section are able to type, so if the absence of one of the compositors threatens to slow down an important job a person from graphics can fill the gap. Similarly, if the finishing section is under pressure during an exceptionally long print run or a rush job, personnel from other sections can lend a hand. Other advantages of this multi-functioning are that staff numbers - and therefore wage bills - are kept to a minimum; there is less crowding in our very small premises; and there are very few (if any) staff sitting around with "nothing to do".

The heads of the sections hold regular meetings to discuss production matters, future developments, etc. Full staff meetings are also held to give staff at all levels a chance to voice ideas, register complaints, and generally participate in the running of the Unit.

Overall management is in the hands of the Director. Any person in this position must have at least a working knowledge of all the production tasks, although obviously he can hardly be an expert in each one. It is also his task to use whatever funds he has in the best possible way and to ensure that the procurement of supplies goes smoothly and that the various sections always have the things required to carry out their work. It is also his concern that staff morale remains high and that quality of production is maintained at the highest possible level.

WHAT LESSONS HAVE WE LEARNED?

Among the most important is that in a developing country with very limited amounts of hard currency, a moderate, step-by-step approach pays off. Though outside aid is sure to be necessary, a great deal can be done with existing resources if one is not over-ambitious. Outside aid in terms of capital expenditure on such items as buildings and equipment is not so very difficult to obtain, especially if an obviously successful local effort has been made. It is in the area of recurrent expenditure that difficulties arise and for this reason whatever is established must not be beyond the capability of the country to maintain.

In a developing country there are good reasons why certain operations should be labour intensive. But this is not the case with a publication unit. If educational and training materials are to be produced as a viable alternative to the commercial equivalent, a small, highly trained and efficient staff pays better dividends in the long term than a few skilled supervisors directing a large unskilled or semi-skilled work-force.

Staff must be selected very carefully. It is sometimes assumed that anyone can be trained to do a first-rate job. It is our experience that this is not the case. The people appointed must show interest and some aptitude. This is why it is best to appoint on a trial basis only. If in a year of in-house training they demonstrate the necessary attributes, then higher level, formalised training can be arranged. Staff-building may take time, but it is time well spent.

Books do not write themselves, and without authors even the most skilful production team cannot be effective. Skilled writers must therefore be identified. We have been fortunate so far, but are always conscious of the need to encourage local writers.

The purchase of equipment needs careful thought. It is necessary to assess the needs of the market and to estimate

likely growth and possible future diversification. On this basis a phased programme for procuring equipment and training personnel to operate and maintain it can be drawn up. Maintenance is particularly important. Most of the machines likely to be installed are fairly easy to operate. But this simplicity has often been achieved by using complex technology in its manufacture. Unless it is carefully maintained, it will break down. A well trained, competent technician is therefore one of the most essential persons on the staff. To support him in his job, technical manuals, a good set of tools, and an adequate supply of spares must be available.

When considering the procurement of paper and similar items, it is best to deal either with manufacturers directly or with firms linked with manufacturers and who supply the commercial printing sector. By ordering reasonably large quantities (e.g. around ten metric tonnes) a considerable reduction in price can be obtained. It is also better to order the larger sizes of paper and cut them as required. A quantity of ten metric tonnes may sound a lot (it is about a year's supply for BPMRU), but it is useful to build up a good stock at times when funds are available so that in leaner years there is something in reserve.

Sensitised material such as photographic paper, offset paper plates and similar items, deteriorate more rapidly in a tropical climate than in a temperate one. Unless a permanently air conditioned store is available, it is best to arrange for several deliveries a year. The use of paper plates for the offset printing process is another money-saving approach. They are much cheaper than metal plates and for print runs of up to about 20,000 copies are quite satisfactory. Metal plates are not really necessary unless production is needed in very much larger quantities.

APPENDIX B: CATEGORIES OF PRINTING UNITS

Five categories of small-scale printing units can be identified. In increasing order of complexity they are:

A. Those without electricity, e.g. some schools, agricultural and rural extension offices, and small rural teachers' centres.

B. Those with office skills only, e.g. offices, schools, small teachers' centres, departments in colleges.

C. Those with office and graphic skills, e.g. curriculum development units, teachers' resources centres, large government departments, libraries, tertiary institutions.

D. Those with office, graphic, and printing skills, e.g. small book production units, fully established small printers.

E. Those with office, graphic, printing, accounting and commercial skills, e.g. fully developed offset printing units.

Equipment suitable for each of these categories is listed in the following table.

	A	B	C	D	E
Manual typewriter	*	*	*	*	
Electric Typewriter		*	*	*	*
Rub-down letters			*	*	*
Headliners				*	*
Phototypesetter					*
Wordprocessor					*

	A	B	C	D	E
Lettering guides	*	*	*	*	
Scanner			*	*	
Paper plate				*	*
Darkroom					*
Process camera					*
Metal plate maker					*
Hectograph	*	*			
Spirit duplicator	*	*	*		
Ink duplicator		*	*	*	*
Photocopier			*	*	*
A4 offset				*	*
A3 offset					*
Collator			*	*	*
Long-arm stapler	*	*			
Bench stapler		*	*	*	
Wire stitcher					*
Binder					*
Cardcutter	*	*	*	*	*
Guillotine				*	*

GLOSSARY

Adhesive binding Where single sheets are held together in book form by glue applied to the spine.

Anti-set off spray A device for depositing microscopic grains of powder on each printed sheet as it reaches the delivery pile.

Art work Copy assembled and ready for photographing by a process camera.

Card cutter Small hand-operated cutting machine for cutting small amounts of paper.

Collate To arrange sheets or sections in proper sequence so the pages will be in the correct order for sewing and binding.

Continuous tone Illustrations that are tonal (e.g. photographs).

Cutting mat A specially formulated plastic sheet on which copy can be cut by scalpel. The cut in the mat closes up and the edge of the scalpel lasts longer.

Daisy wheel A typing head for use on electric typewriters and word processors, shaped like a flower head, the letters held on arms like petals.

Dark room A room completely blacked out for the processing of photographic material.

Display type Type used to attract attention, usually 18 point or larger.

Drying rack A rack of shelves on which wet prints can be placed for drying. Usually associated with screen printing.

Film stripping The process of joining different pieces of photographic film together.

Floppy disc A disc that is used on word processors and photosetters to store information before outputting.

Foil blocking Using a metallic foil to stamp designs or lettering on to the cover of a folder or book. The foil is transferred by heat.

Golf ball A replaceable typing head for electric typewriters.

Guillotine A machine for cutting large amounts of paper.

Headliner In photosetting, a trade name for a machine that produces display sizes of type.

Hectograph A very cheap duplicator. It comprises a tray of jelly and various coloured pencils. Will produce a limited number of prints in colour.

Illustration General term for any form of drawing, diagram, halftone, or colour image that serves to enhance a printed work.

Imposition In printing, the arrangement of pages in a form so that they will appear in the correct order when the printed sheet is folded and trimmed. Also the plan for such an arrangement.

Impression cylinder Cylinder in a printing machine that presses the paper against the printing surface so that contact is made and an impression is produced.

Interface An electronic device to enable floppy discs from word processors to be made compatible with photosetters.

Justification Setting lines of type flush left and right by placing more or less space between words.

Light box A glass topped box which contains a light source. Used in the production of artwork or for the stripping and spotting of negatives.

Mechanical tints Pre-printed tints that can be laid down on to artwork.

Negative A reverse photographic image on paper or film. White becomes black and black becomes white.

Opaquing liquid Used for eliminating any portion of a film negative by painting over the unwanted areas.

Paste-up Assembly of all type and design elements on art-board in exact position and containing instructions either in the margin or on an overlay.

Photocomposition The preparation of manuscript for printing by the projection of images of type characters onto photosensitive film or paper.

Platemaker A machine used for the production of litho-graphic printing plates.

Point system Printers measuring system a point is 0.01383 inch. Although developed for hot metal type faces, it is still used on most photosetters.

Process camera A camera specially designed for producing both line and half-tone film for printing.

Processor A machine for developing film or plates for off-set litho. Can consist of two or three tanks containing chemicals through which the material to be developed is passed.

Perfect binding A method of binding in which pages are held together and fixed to the cover by means of a flex-ible adhesive. Widely used for paperbacks.

Red masking tape A self adhesive plastic tape used for joining negatives. The red colour prevents light pen-etrating during exposure.

Repro Also called reproduction proof. Printed on specially coated paper and used in paste-up.

Scanner Photoelectric equipment for scanning copy usually to prepare stencils for mimeographing.

Screen In printing, the finely cross-ruled glass plate placed before the lens of the camera (or a contact screen placed in contact with the film) to break up continuous tone copy into dots for reproduction as half-tone. Screens are designated by the number of ruled lines to the inch, the greater the number of lines, the finer the dot.

Screen fabric Material used to cover the frame for silk-screen printing.

Scumming A defect in offset printing caused by the unwanted sensitizing of a non-image area of the litho plate so that it accepts ink and prints.

Side-lay A device on a printing press that ensures that one side of a sheet of paper is in the correct position before it is fed through the printing cylinders.

Silkscreen printing A printing method in which the image is transferred to the surface to be printed by means of ink squeezed through a fabric or metal screen stretched over a frame. Also called screen process printing.

Spotting out The elimination of white dots on a negative by painting over them.

Squeegee A device used for squeezing ink through the screen in silkscreen printing.

Suction feed A method of feeding single sheets of paper into an automatic printing press.

Type face The letters of the alphabet and all other characters used singly or collectively, to create words etc.

Visual display unit (VDU) A cathode ray tube which gives a visual display of photosetter or computer output.

Wax coater A device for depositing a thin film of wax on the back of work that is to be pasted up.

Wire stitching The inserting of wire staples through the spine or side of a book or pamphlet to bind the pages together.

Word processor A machine that has a typewriter keyboard, a VDU and some means of storage that will enable the typed matter to be retrieved, corrected or changed and then re-outputted.