Editing and Publication

A handbook for trainers

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The International Rice Research Institute (IRRI) was established in 1960 by the Ford and Rockefeller Foundations with the help and approval of the Government of the Philippines. Today IRRI is one of the 13 nonprofit international research and training centers supported by the Consultative Group on International Agricultural Research (CGIAR). The CGIAR is sponsored by the Food and Agriculture Organization of the United Nations, the International Bank for Reconstruction and Development (World Bank), and the United Nations Development Programme (UNDP). The CGIAR consists of 50 donor countries, international and regional organizations, and private foundations.

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The responsibility for this publication rests with the International Rice Research Institute.

Contents

Foreword

This companion handbook to *Editing and publication: A training manual* sets out the instructional methods invented by Ian Montagnes for the Editing and Publication Training Course offered at IRRI 1985-1988, in collaboration with the International Development Research Centre (IDRC) of Canada.

The intent is to facilitate development of courses elsewhere. National agricultural research program trainers and others can adapt the contents and approaches to their particular needs, adding local examples and translating into their own languages.

IRRI will grant permission readily for material to be duplicated for training courses, in the hope of continuing and expanding dissemination of scientific knowledge throughout the world.

Klaus Lampe
Director General

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Introduction

This handbook has been written as a companion to *Editing and Publication: A Training Manual* (Los Baños, Philippines: International Rice Research Institute, and Ottawa, Canada: International Development Research Centre, 1991). It is based on the teaching experience that produced the training manual. In it, other trainers will find advice and sample materials: exercises, assignments, and schedules.

Goals

Editing and Publication: A Training Manual was designed to be flexible, in the hope that its contents will be used for training by many organizations concerned with improved publication of the results of research.

The 86 units provide basic information and advice that can be adapted to local conditions. Because the contents were written for use worldwide, trainers may want to remove portions that do not apply in their areas, and to expand other portions that are of particular importance to them.

The materials can be translated into the many languages in which editors work around the world.

The manual is concerned not only with improving the results of research at the technical level, but equally with interpreting those results for a more general readership.

With only minor revision, many of the units can be used in workshops for authors or would-be authors. They may also be used in university courses about writing technical materials.

Units may be photocopied freely for use in training by non-profit organizations in the Third World, provided permission is first obtained from the International Rice Research Institute.

They have been written and published in the hope that they will be used widely.

Origins

The manual was developed for a course that operated under almost ideal conditions. It was conducted at the International Rice Research Institute (IRRI:) in the Philippines, the oldest of the international agricultural research centers, and benefited from all the physical and personal resources of that institute's large and experienced Communication and Publications Department. It was funded generously by the International

Development Research Centre (IDRC) of Canada, which made it possible to bring trainees from many parts of the world for 14 weeks and to equip them with the tools to practice their skills. It had the collaboration of the University of Toronto Press, also of Canada, and thus (with IDRC funding) had a project leader who could devote full time to training and the development of training materials, reinforced by other members of the Press staff who brought special expertise in publication design.

The contents have been tested under several other circumstances. These include a two-week course for editors of scientific journals, sponsored by the Chinese Academy of Agricultural Sciences in Beijing; a two-week course for researchers and administrators concerned with the dissemination of scientific results, organized by the International Centre of Insect Physiology and Ecology and IDRC in Nairobi; a three-week course for editors of books and journals, organized by the Malaysian Higher Learning Publication Committee, with IDRC support, in Kuala Lumpur; a two-day workshop on writing for publication for researchers attending an international conference in Bangkok, organized by IDRC; one-day workshops on newsletter publishing held under local auspices in Manila and Kuala Lumpur; and parts of a six-week course on book publishing organized by UNESCO and the University of the Philippines in Manila. A number of the units have been translated into Bahasa Indonesia and were used in a series of three-week courses for editors given in that language, organized by the Central Research Institute for Food Crops, again with IDRC support, in Bogor, Indonesia. In the light of these experiences, the training materials were revised continually during almost three years. Materials have also been used in English or translated by graduates of the IRRI course for in-house seminars and training on their return to their home organizations.

At the end of most of the courses and workshops, participants were asked to evaluate the training materials. Responses were almost uniformly positive.

The advice that follows—on how to use the material in the training manual—is personal. Every trainer has his or her own way of working. What succeeds in one situation may fail in another. The advice may be impractical under some conditions, impossible in others. This is simply what, at IRRI and elsewhere, worked for me most of the time.

Ian Montagnes
Los Baños, Philippines
May 1988

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Plan for success

General considerations

Training conditions need to be planned carefully. The best results come from discussion in which trainees have ample opportunity to take part, and from interaction within the group. Discussion and interaction are more likely to happen if a few guidelines are followed.

- Registration should be limited. At IRRI, the course was restricted to 10 people at a time. Shorter workshops had as many as 25 people, but no more. Unless numbers are small, it is impossible to give personal attention or to encourage discussion and interaction.

- Trainees should be selected carefully to secure a balance of interests and experience. There should be some variety in the group, because much of the learning comes in conversation among the trainees themselves. On the other hand, a group that is too diverse—in experience, in responsibilities, or in concerns—offers few common factors for training. In such groups, at any point some members may be attentive and others may be bored by material they already know or have no use for; people with little in common may also have difficulty working together. A satisfactory balance can rarely be achieved if participants are nominated independently by a number of local organizations without any central selection. Candidates preferably should be chosen by the course organizers and trainers, on the basis of detailed written applications.

- Participants should be fluent in a common language that will be the language of instruction, practice, and discussion. This should present no problem for courses given within a single language area. Other courses may want applicants to provide some proof of language fluency (such as the TOEFL test for English).

- Participants should live in residence during the full period of the course. That way they can engage in group exercises and projects in evenings and over weekends. They will thus get the maximum benefit from the relatively short period of training. If they live at home, they are likely to be distracted by family or business matters.

- To encourage discussion, the training area should be as informal as possible. If possible, trainees should gather around a single table, facing one another. The trainer should be close to the trainees, not on a dais. With larger groups, it may be possible to organize a circle of tables. The atmosphere should be that of a seminar rather than a classroom. Microphones should be unnecessary.

- More than one person should be involved as trainer. In short courses, where discussion may be non-stop for eight hours a day, one person cannot keep up the pace day after day. The trainees also need a change of face and voice. In long courses, the pressure on the trainer may not be quite so great but the need for variety remains. A team approach is desirable; in short courses away from IRRI, my wife Elizabeth and I have shared major teaching and have also involved local assistants, mainly graduates of the IRRI course, to work with trainees and lead some sessions. Specialists may be invited whenever possible to provide expertise; under the extremely fortunate conditions at IRRI, we used up to 15 guest lecturers from the Communication and Publications Department, as well as a visiting designer from Toronto.

- There must be adequate support staff. There will be dozens of handouts and exercises to photocopy, typing to be done, administrative details to be looked after, and endless unexpected personal problems of the trainees (travel plans, currency difficulties, illnesses, diets, etc., etc.) to be looked after. A good secretary, or the equivalent, is essential throughout the period of the course and for at least a few days before and after.

- Some basic equipment is needed. An overhead projector is most valuable, for with it the class can follow the process of editing a text. A blackboard or equivalent is essential. Other useful equipment is discussed later.

- If at all possible, advance arrangements should be made to visit a local printing plant. Other field trips may be desirable.

- Advance arrangements must be made to produce a printed project, if that important element of the course is retained. The equipment involved need be no more than an electric typewriter and a small offset press or a photocopier.

- The principles set out in the manual should be related as closely as possible to the actual experience of the participants. To this end, applicants may be asked to send sample publications that they have worked on or that have been produced by their organization. This will not only indicate what they know; it will provide examples for class discussion. Other local examples may have to be found by searching through libraries. Any trainer coming from abroad should arrive several days in advance of the course in order to learn about local conditions and practices and find local examples.

Announcing the course

The course should be announced well in advance. There must be time for the announcements to be distributed, for applications to be submitted and processed, and for successful candidates to arrange to attend.

The formal announcement may be a single sheet or more. It should

- announce the dates and location of the course;
- indicate who the course has been designed to help (editors at research institutes, etc);
- provide details about the purpose and content of the course, so that everyone attending will know what to expect;
- give the criteria for eligibility and conditions of participation, including those set out in the preceding section on general conditions;
- describe the procedures for application and selection clearly;
- set a deadline for applications;
- say when successful candidates will be notified;
- explain what funding is available to support participants, giving proper credit to all sponsoring organizations.

In setting schedules, allow time for delays in the mail and for other delays in distribution within the organizations receiving the announcement. Remember too that participants need time to arrange to leave their desks. If trainees are coming from several countries, they may need two months or more to secure all the necessary permissions and paperwork for international travel. In such cases, the deadline for submissions may have to be four months before the course begins.

Application forms

Every organization running a training course must develop its own application form. Applicants may be asked for the following information about themselves:

- full name
- full postal address for home and office
- telex or cable address for international courses; telephone number for local courses
- city, country, and date of birth
- nationality
- sex
- religion (in case provision must be made for special diets or religious observations)
- names and addresses of people to be notified in an emergency, with their relationship to the applicant
- educational record
- related workshops/training/conferences previously attended
- proof of language proficiency (if instruction is to be in a language that is not the applicant's first language)
- current employment: title; period of service, name and address of organization; type of organization; name and title of supervisor; applicant's duties and responsibilities, including the nature of each responsibility and the approximate percentage of time devoted to each activity

- previous employment
- a list of publications on which the applicant has worked during the previous two years; or if the applicant has not previously been involved in editing, a list of typical publications issued by his or her organization during the past two years
- three or four sample publications from this list
- some indication of the applicant's future prospects: how he or she expects to use the training
- formal endorsement by the applicant's supervisor supporting the application, ensuring that leave will be granted if the application is successful, and (if a project is planned) undertaking to cooperate fully in providing materials for the publication project.

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A three-fold approach to training

Three elements

The training method we have used at IRRI and elsewhere involves three elements:

1. *Learning through discussion.* In a short course it is impossible to train an editor fully; that takes months or years on the job. It is possible, however, to train someone to *think* like an editor. The emphasis therefore is nor so much on prescription as on analysis: why is more important than how. As much as possible, trainees should participate in analyzing problems and finding solutions. The goal was summed up admirably by one trainee at the end of a course. He said: "I used to edit by instinct. Now I have a logic."

2. *Learning by seeing.* Discussion should be reinforced as much as possible by concrete examples. Examples should be real, and local. Actual publications should be examined and discussed. Field trips should be organized so that processes described in class become realities.

3. *Learning by doing.* This is the heart of the course, reinforcing discussion and observation by practice. Especially at the beginning of the course, practice must be through exercises. As soon as possible, however, exercises should give way to a real manuscript. Each participant then will be actively involved in planning, editing, designing, and producing at least one publication. Projects may be prepared individually or in groups; they may be formal typeset booklets or small typewritten folders. The important thing is that their progress follows the more formal curriculum, and that everyone gets hands-on experience that can be discussed with peers and the trainer. Projects are practical in courses as short as two weeks. It is difficult to schedule them in courses shorter than that unless the trainees arrive with considerable shared experience.

Learning through discussion

The aim in this program is not to train people in one right method. In editing and publishing there is no single "correct" solution, only approaches that are likely to prove more or less successful. Each publication presents its own demands; each publishing program has its own policies. Trainees coming from different organizations, different countries, or different cultures cannot be told "This is the way!" It may not be the right way for them.

The course therefore becomes a place to exchange experiences, problems, solutions, and approaches. The trainer leads discussion and may be able to draw upon wider or longer experience, but everyone should have something to contribute—an example, a problem encountered, a solution achieved, a method used in his or her office or country. The most valuable contribution may be a question that will prompt discussion.

Encourage questions

I encourage questions in class. I ask questions, and I urge the trainees to ask them. There is no better way to find out what the trainees know and what they need to know. Often a question asked by one person can be turned into a general discussion, with other trainees offering suggestions or explaining how they deal with the same question at home.

In some countries, it may not be common to ask questions publicly. Then it may be possible to ask for written questions to be passed up for discussion. Sometimes, also, people have hesitated to ask me a question because they were uncertain about their English. In China and Indonesia, local editors acted as translators to encourage a free discussion.

The goal is to train people how to think like editors; that, among other things, means asking questions. Many of the units are in fact lists of questions to ask about a manuscript or lists of things to check. The questions stretch from strategic planning, through detailed editing, to choosing a printer. If the course succeeds, no graduate will ever again accept a text, a table, or an illustration without questioning its purpose and its details.

Questioning is one of the basic lessons of the course. Another, still more fundamental, is the relationship of editors to authors and readers. This is the subject of the first module, and it becomes the test of almost every editorial decision thereafter. It cannot be repeated too often: "What did the author intend? What does the reader need? What will the reader understand? How can we help the author communicate most effectively with the reader?"

Involve trainees

It is possible to stand at the front of the room and dictate a set of questions to be asked in a particular situation. It is more effective to involve the trainees in building a list of questions, or to invite them to explain how they deal with a particular situation. Here are some examples from Module 1.

In unit 1.1, I ask the trainees to say what an editor does, based on their own experiences. The responses come randomly. I write them on the board in five columns that have no headings but relate to acquisition and appraisal, editing for organization and language, editing for detail, editorial responsibilities in production, and editorial collaboration in promotion and distribution. Then at the end I introduce these major headings. I may as well have to add a few jobs that have not been mentioned. Normally the whole group gets involved, and at the end may

be surprised to see just how much they do. The list-building involves them by *starting with what they already know.* Then comes the real lesson: *why* editors do all these jobs.

Similarly, in unit 1.6,1 ask them to suggest the questions that might be included in a readership questionnaire. Usually they come up with some I had not considered. Lists in the manual are rarely exhaustive.

In unit 1.7, I ask them to list questions to ask an author as an overnight exercise.

In unit 1.8, the discussion can begin by inviting the trainees to say how editors find manuscripts in their own organizations. Then can come other ways recommended in the handout. (The same method can be used later in the course, in unit 11.1 : a trainer may first ask what promotional techniques the trainees use at home.) In this way trainees learn from one another. This is better than learning everything from one person, especially if that person comes from another country or culture.

Keep handouts until the end

Clearly, these techniques cannot be used if a unit from the training manual is distributed before the lesson. The trainees will simply repeat what they have read. They will not think for themselves—which is what the course should be teaching. (If the printed units are handed out just at the beginning of the lesson, there is another danger: everyone will be reading them and the trainer will be talking to the tops of bowed heads.)

In many countries, it is normal to hand out printed materials before the lesson. I prefer to wait until the end. Then I hand out the printed units and suggest the trainees read them in the evening to reinforce what they have learned that day in class. This leaves the class itself open to discussion and makes it easy to draw information from the experiences of the trainees themselves. Only occasionally, if the subject is technical, do I hand out information in advance.

Use examples

I try to use lots of examples in teaching—more than appear in the handouts. Only with examples can principles become concrete and clear. Trainers should build their own collections of examples from reading and experience. It is surprising how many can be found during two or three months of editing. Some examples moreover may be used more than once, to illustrate different points.

Examples used in class may be much more playful than in the manual. In discussion about unit 2.1, for example, I may begin the section on abstraction by writing the kind of address children sometimes write in their schoolbooks (or at least they did in Canada): “Ian Montagnes, 32 Colin Avenue, Toronto, Ontario, Canada, North America, Western Hemisphere, the World, the Galaxy, the Universe.” That is a simple example of rising levels of abstraction. From that it is easy to move to something a little more complex: “Ian Montagnes, editor, publisher, communicator, worker, man, human, vertebrate, animal, etc.” or directly to the example in the manual.

In the same lesson, I usually introduce a simple example of the fuzziness of higher-level abstractions. I say, "I am thinking of an animal that lives in my house. What kind of animal is it?" I get lots of cats, dogs, fish, birds, and even the occasional cockroach, but no one yet has guessed that I am thinking of the little house lizard that is common in the tropics. The lesson: to communicate clearly, it is essential to be specific and concrete.

Be flexible

In leading discussion, I try to be flexible. Often unexpected discussions open from a question, and lessons that look as if they can be covered in an hour may take twice as long or more. If the time is available, use it.

Once, for example, the subject of text/picture balance in unit 1.4 prompted a related question: What do you do when an author wants more illustration than the budget allows, especially if the author has good reasons for that opinion? From that the discussion broadened to problems that arise in dealing with authors generally. That is dealt with principally in one unit, 3.9, but it is a pervasive issue that concerns most editors. It can be a particularly difficult problem for young editors dealing with senior authors in a hierarchical institution. It deserves to be discussed as soon as it arises and, if time allows, on more than one occasion.

If the course is held in a language that is not the trainees' own, special care must be taken in discussion. At IRRI we worked only in English, which for almost every trainee was a second or third language. (In some of the courses, every trainee had a different first language.) Even those who were fluent in English had to grow accustomed to an unfamiliar Canadian accent and to the accents of other trainees. I learned to speak more slowly and more clearly, with simpler words and in shorter sentences than usual. I repeated important information, and used the blackboard frequently to reinforce the spoken word. From time to time I would ask whether everyone understood, and ask questions to test whether they did. Sometimes I had to ask a trainee to repeat a question until I understood it or everyone else did; sometimes other trainees would help if I could not understand a question. The trainees explained things to one another after class. Generally those who were more fluent in English helped those less fluent.

Find local references

Discussion should relate to the trainees' own knowledge and experiences, and the material in the manual may have to be adapted accordingly. Local examples should be added. Exercises should be adapted to include local names and circumstances. (I once gave an exercise about a man named Ben. After we had discussed it thoroughly, one trainee put up his hand and asked "What is a Ben?") Portions that are irrelevant to local conditions should be dropped: in a publishing community that prints only by offset, for example, there should be no need to explain the processes of letterpress. In addition, local experts may be invited to speak on particular topics.

To encourage discussion, I would often say: "I'm talking from my own experience. How does this relate to your experience and to conditions in your organization?" Soon, trainees offered this information on their own. At IRRI, many comments (especially those that disagreed in some way with what I had been saying) began, "In my country, we . . . " That is healthy. The liveliest classes were often ones in which different practices and points of view were presented forcefully. I usually ended by saying, "I may want to do it differently, but the important thing is that that approach works for you."

Learning by seeing

Most people learn more readily when information arrives through two senses rather than one. As much as possible, I try to reinforce talk with seeing.

Write it down

During discussion, I am rarely far from the blackboard. As each new point is made, a heading goes on the board. This is particularly important if the trainees are being taught in a language that is not their own. Alternatively, headings can be set out on slides or overhead transparencies, but this restricts discussion to a set pattern at the expense of flexibility and spontaneity.

The overhead projector is a wonderful invention for teaching editing. A sentence can be put on the screen and then, using colored pens, it can be edited in full sight of everyone. The editing may be done by the trainer or by trainees. Two or three different approaches to editing can be shown. The device is flexible, inexpensive, easy to operate, easy to maintain, and is generally available. The overhead projector combines action with sight and, unlike movies, it can be used to respond immediately to questions or suggestions. I use one constantly in discussions about editing.

Bring examples

I also use concrete examples in class as much as possible: actual journals, newsletters, and books; articles photocopied from real publications; samples of paper or of type; examples of good and bad graphs; samples of promotional mailing pieces, and so on. In the first module, early exercises involve analyzing real publications. These might be issued by IRRI, IDRC, or other respected publishers. In that way trainees learn from the beginning that any publication can be examined and sometimes improved. In short courses outside IRRI, my wife and I will spend hours in the local libraries searching for examples from that area.

One never knows when sample publications can be useful. One time, during discussion of unit 5.3, a trainee remarked that at her office editors were reluctant to use anything but straight informative openings for articles in their newsletter; they wanted a formal style because that seemed proper for a research institute. I was able to produce several examples of newsletters from equally respectable research institutes that did not hesitate to use anecdotes, quotations, and other devices to begin articles.

Play-act

Role-playing is another way of teaching by showing. My wife and I did this in introducing techniques of interviewing (unit 5.8). She acted as the subject of an interview. I was the interviewer, appearing in four personalities: (1) a nervous interviewer, in awe of the subject, asking only the most general questions and taking copious notes; (2) an aggressive and rude interviewer, sloppy, almost totally uninformed, and argumentative; (3) a rigid interviewer with a set list of questions, all read from a sheet, all too long, all requiring only a single-word answer, "Yes" or "No," so that the subject contributed nothing new; (4) a relaxed interviewer who moved from pleasant opening conversation to a well-planned series of questions which began quietly and probed gently. We played our parts broadly and there was considerable laughter, not least because Elizabeth rarely knew what I was going to do next. At the end, we asked the trainees what makes an interview succeed. They produced most of the answers set out in the unit (which they had not seen). This was always a successful lesson because it started with humor and involved the group's active participation.

Organize field trips

Field trips are important. In particular, any course in editing should, if at all possible, include a visit to a printer. Many editors have little idea of what happens to a manuscript once it leaves their hands; yet the processes of typesetting, reproducing illustrations, printing, and binding govern much of what they do. Editing is easier if the editor knows why some things are done in certain ways, and why the typesetter or engraver or printer needs detailed information of specific kinds. Module 8 is full of information, but it cannot take the place of actually seeing how a publication is physically produced.

Field trips might also be made to a photographic darkroom to see how prints are processed, to an extension department to learn how published materials are used in the field, to a bibliographic databank if there is one in the area, and so on. Field trips not only make discussion concrete; they are a break in routine and thus relieve pressure.

Learning by doing: exercises

Especially in the first part of the course, exercises can be given nightly to reinforce discussions held during the day. Later in the course, the time is needed for projects. A number of exercises or assignments were developed at IRRI, and appear in this volume. Nearly all the sentences to be edited in the exercises come from actual publications. The exercises, like the examples, should be adapted to local needs and practices. Many others could be developed, depending on the nature and emphasis of a particular course. A set of photographs could require captions; an established series could be re-designed; a promotional mailing piece could be designed.

Exercises can be marked and criticized individually, but I usually discuss them in class, first thing next morning. If there is a sentence to be edited, for example, two or three trainees may volunteer answers and as a group we consider each of them. Thus all benefit from examining different approaches, solutions, and errors. If discussion is particularly

lively, an evening's exercise may take up half the next morning. It always seems time well spent, for this is where small and large lessons can be drawn and reinforced.

Originally I was concerned about embarrassing individuals by opening their efforts to public comment, and one must of course be sensitive to that danger. But it never seemed to create problems as long as the comments were supportive, and as long as everyone's suggestions, including my own, were open to questioning.

Start the day with push-ups

Once Module 2 was completed and nightly exercises in editing for language ceased, there was some danger its lessons would be lost. To prevent that, I introduced a short exercise to begin each day. We called it a morning push-up. I would write on the board a sentence in need of editing and give the group five minutes or so to decide individually what was wrong and fix it. Then we would have five or ten minutes of discussion. The analysis always came first: "What's the problem?" (Answer: "a passive verb"; "too many nouns in a row"; "too many words", etc.) Then came different solutions. There might be a friendly competition as I edited the sentence to different directions on the board. Sometimes a trainee would be too eager in editing and would make so many alterations that the meaning was changed: that would be a useful lesson. Sometimes a trainee would misunderstand what the author intended and would change the meaning: that too was useful. More often, we might get two or three different but equally good suggestions: proof once again that there is rarely only one right answer in editing.

Exercises can involve more than words. In the sessions on illustration, the trainees at IRRI learned how to use technical pens, T-squares, drafting tables, triangles, and transfer letters; then they used those skills to draw graphs.

Use a camera

The best way to show people what makes a good photograph, we discovered, is to have them take photographs. A Polaroid camera is a valuable tool for this, because it gives instant feedback. At IRRI, two or three afternoons were spent taking Polaroid pictures and criticizing them as the images appeared. Everyone had a chance to take each kind of photo, and at the end of each assignment the first person to try usually was given a second chance. One of the first assignments was to take a photo of a single person out of doors. Inevitably the first photo would be taken from a distance: the person would be small, the outdoors large. "Get closer," I would say. The next picture would be closer but with the person still only a fraction of the image. "Get closer," I would repeat. Eventually, someone would approach the ideal and the lesson was learned. When everyone had had a try, we could move on to the next exercise, taking pictures of groups of three or four colleagues.

As an exercise in choosing photos for publication (unit 6.5), I gave them nine photos of an IRRI event and asked them to choose five for use in a newsletter, and then to choose two of those to be larger than the others.

They studied them overnight. Then we had votes for each picture. Some photos got almost no votes; others were selected unanimously. Once the top five were chosen, trainees had to defend their decisions: explain why they had accepted or rejected any photo. Then we decided as a group which should be large. Once those basic decisions were reached, each trainee showed how he or she would crop each photo, and we discussed that. This was always a lively session. Everyone learned from others. It also showed them how much they had learned in a short time about using photographs.

Photographs in such an exercise should have a common theme: for example, the work of an organization, the stages in a process, or a colorful event with action, such as the celebration of an anniversary or a field day. One of the sets of photos we used at IRRI showed an inoculation clinic at a local village. If possible, trainees should be given real photo prints rather than photocopies, in order to make the exercise more real. They should always be given more photos than they can use.

Learning by doing: projects

Exercises are essential in training, but they are by nature artificial. People who are already involved in editing will be more interested in real projects that will be useful beyond the course.

Individual projects

The projects can be as ambitious as time allows. In a two-week course they may involve only a few hundred words. At IRRI, with a 14-week course, we had the time and resources for each trainee to edit and produce a booklet of up to 7000 words. Regardless of the length and complexity of the projects, the process is the same.

The trainees are each required to bring from home a raw manuscript with all necessary illustrations and data for tables and graphs. During the course, each analyzes the purpose and intended readership of the publication, re-organizes it if necessary, shortens it if necessary (sometimes by 50 percent or more), edits it for language and detail, chooses illustrations, prepares graphs, creates a design format, specifies type styles, marks up the manuscript for the typesetter, marks illustrations for reproduction, reads proof, dummies pages, and checks final page proof. Each step in production follows discussion in class. Each step is monitored by the trainer.

At IRRI, the process began at the end of Module 1, when they were asked to analyze their publications. I met them individually to discuss what they had said and how their publication might be planned to meet those aims. That often involved reorganization. Often it also involved reducing length, because we tried to keep projects to 16 or at most 20 printed pages. After that their work was checked carefully, usually in several stages. (One trainee at the end said, "I thought I had done a good job of editing the first three pages of my manuscript, but they came back with three typed pages of comments. So I went back and revised and turned that in, and it came back covered with more comments.") During one week, an experienced designer from the University of Toronto Press worked closely with each trainee. Copy editing, proofreading, and dummying were checked equally carefully.

I preferred at IRRI to write my major comments about each project in memos to the individual trainees. This had two advantages. It gave them the comments in a form they could consider carefully and at their own speed; sometimes, in conversation, they might not understand what I was saying but would be reluctant to ask me to repeat what I had said. It also gave them examples of the art of corresponding with authors, since I tried to write to them in the same way I would write to an author whose work I was editing. On some projects, my comments took almost as many pages as the final publication.

We also talked about their editing. I spent as much time as possible meeting trainees one-to-one about their projects. Before I handed over a memo, or after the trainee had had a chance to read it, we usually discussed its major points in person.

All this takes immense amounts of the trainer's time, as well as that of the trainees. But it is the only way to bring home another fundamental lesson about editing: that editing is a profession of detail, that good editors must be aware of details, and that in every manuscript there are hundreds of details to watch. (One day I walked into the classroom and found a message on the board: "When will this end?" I replied: "You will be finished only when you are satisfied. My job is to make sure you are not satisfied too soon.")

Here is one example of the transformation that can occur. A trainee brought from home a manuscript called "The application of appropriate technology in rural development." It began by defining appropriate technology, then dealt with the history of his organization, then went into the problems of developing appropriate technology, and finally described various applications of appropriate technology in farming and rural life. The paper was long, abstract, and semi-technical. He said it was intended to be published in English for extension workers, social workers, and village teachers, who would carry the word to the rural people; but that eventually a Swahili version would be given directly to the village farmers. We decided to aim immediately for that final group, and to produce something in English that could be translated directly for them. He began to introduce personal examples, stories of people who had benefited by getting a plow or a cookstove (one of these is quoted under "Use examples" in unit 5.2). By the end, he had a 16-page booklet titled "12 ways to make your life easier" with a smiling woman on the cover stirring food over a cookstove. Inside he listed 12 ways to benefit from appropriate technology: "1) Use a plow: 2) Build a harrow; 3) Make a planter;" etc. For each item he had written a few brief paragraphs. For most he had also drawn an illustration. His project now was aimed straight at the village farmer.

At the end of the course, each trainee carried home 100 copies of his or her project. Some had folders or booklets describing the work of their institutions. Some had research reports. Two produced newsletters, one of them a prototype for a new publication, the other a new editorial approach and design for an existing one. One trainee wrote and

designed a catalogue for his book publishing house. Several others prepared materials for extension use. One re-designed a major journal and edited a sample article. Another edited sample sections and established the design for a highly technical book. Nearly all the publications had practical use back home. One booklet describing an organization, for example, has been reprinted and distributed widely as part of that organization's 25th anniversary.

In every case, the trainees could say when they got back home: "This is what I achieved during the course." That is more valuable than the certificate they received at graduation.

Produce a folder

In short courses, projects cannot be so ambitious. In a two-week course, it may be enough to produce a simple folder, either individually or in groups. Group projects may be necessary when there are too many trainees and not enough time for individual counselling or individual production. The Indonesian course, for example, had each person edit and design a two-fold folder (an A4 sheet printed on both sides and folded twice) about the trainee's institution or one aspect of its work. In Nairobi, on the other hand, trainees were broken into groups of four; each group then chose a topic from the manuscripts the members had brought to the workshop, and prepared it as a folder. In both places, the final folder was typed on an electric machine and reproduced by small offset press or photocopier.

A folder provides plenty of scope for training. Even a small one contains enough text to demonstrate editing for organization, language, and detail. It can include illustrations. It is demanding in design. It allows the trainer to comment intensively and to demand revision until the project is as good as it can be.

A common problem in folders concerns organization. A manuscript introducing an institution frequently will begin with the institution's goals, its place in an administrative hierarchy, its history, its location, its resources—and only after that describe its achievements. Then the trainer can say: "But this is a folder for visitors and the general public. What they care about is how your institution can *help them.* Why not start with the achievements? Explain why you are important. Then give background—but first catch the reader's interest."

Organize group projects

Obviously, individual projects provide the most opportunity for personal instruction. But group projects have their own benefits, in that they force discussion among the trainees. If the trainees work well together, they can teach each other a great deal. On the other hand, one person may dominate the group and then may even lead it into inappropriate decisions; or groups may spend too much time arguing instead of accomplishing. Groups need careful watching and occasional assistance.

In the IRRI course, two kinds of group projects proved generally successful in addition to the major individual project.

The first was a newsletter aimed at graduates of previous courses, donors, and friends. It provided an opportunity to develop several skills. To begin with, each trainee interviewed another trainee (chosen by lot) and wrote a short article about that person, which included at least one fact previously unknown to the group; that article was then edited by a third trainee (again chosen by lot) into a brief paragraph for the newsletter. Thus each group introduced themselves to previous participants. Trainees formed their own editorial staff, headed by a managing editor, and assigned further responsibilities. They wrote articles and took photographs. I contributed an editorial and prepared short notes of news about the alumni. We planned the readership, print run, and contents for each issue as a group in the class, wrote headlines for the articles together, and agreed on the editing. The text was then set on a word processor for camera-ready copy. Eventually we laid the issue out together—step by step, each person with proof and a set of grids working through to a finished dummy. The newsletter was started to keep graduates in touch, hoping to form a network. It proved as well to be an effective teaching device.

Any course that concentrates on newsletters or on publishing for the non-specialist generally might try something similar. A newsletter may be planned around the course itself and the institution where it is being held. The contents then might include interviews with the trainees, an article about the course, and news articles about the work of the host institution. The latter would presumably come from press releases or other material supplied by the host, unless time could be provided for research and writing as well as editing. Alternatively, if all the trainees came from one organization or from one field of research, the newsletter might report new developments in that organization or field, drawing on material produced for other purposes.

The second group project at IRRI was a slide/tape show. (The IRRI course included some training in audiovisual production. This has not been included in the training manual, which is entirely print-oriented: audiovisual work deserves a separate manual.) Toward the end of each course, trainees put together a 15-minute show about some aspect of editorial work. This provided a summation of much of what we had talked about: they had to work together; plan carefully; do research into the subject; write a script that was interesting, informative, brief, and simple in language; take photographs; prepare graphics; and meet schedules. It is unlikely that many other courses can attempt this type of project, but those that have the time and facilities available might consider it.

(Some of the IRRI slide shows have proved useful introductions for teaching other groups. Most useful have been two slide shows, Taking Photographs and the Making of a Book. The first describes technical

considerations and gives guidelines for good composition in photos. The second describes the work of an editor. These and other shows are available, with tapes, at cost from Communication and Publications Services, International Rice Research Institute, P.O. Box 933, 1099 Manila, Philippines.)

Allow time

To prepare even a simple folder during a short course, much less major projects in a longer one, takes time. In a long course, some afternoons can be devoted to workshop sessions. In a short course, this is usually impossible. Under any circumstances, trainees must be prepared to work evenings and weekends. That also is part of the lesson: deadlines must be met, and editing must often be done under pressure. (Pressure also helps trainees feel they are using their time to the best advantage, and in long courses keeps away homesickness or boredom.)

Assignments related to projects appear in a separate section.

Group dynamics

Every course or workshop should start with an orientation session. In it, trainees learn what facilities will be available to them, the customs and procedures of the course or host institution, what will be expected of them, and how instruction will be carried out. Much of this information may be given by the administrative staff of the course or host institution rather than the training leader.

Start them talking right away

After that, it is important to start encouraging discussion within the class. Trainees from some countries and cultures speak easily in groups; others may hesitate to ask questions or volunteer examples. All, in the beginning, may be uncertain. I have found it helps to get everyone talking immediately by asking them to introduce themselves.

First I introduce myself briefly: my name, where I come from, the kind of organization where I work in Canada, what I do there, how long I have been doing it, other professional experience, plus a bit about my family. With small groups we then go around the table so that each trainee can give the same information. Then I ask each to answer two further questions: "What are your chief interests in being here? What do you want to get from this course?" With larger groups the introductions may be shorter but still each person is asked to speak briefly. This helps break down any initial reserve. It introduces all the participants to one another. And the answers—especially to the last questions—are useful in deciding exactly how to shape the teaching for that particular group.

Be informal

In the first session, I ask the trainees to say how they want to be addressed. The atmosphere will be more informal, and discussion more likely, if in class everyone uses single names—without titles like "Dr." or "Mr." or "Mrs." or "Miss"—as long as everyone addressed in that way is happy with the name used. I start by saying they can call me by either first or last name. Using my first name, if they are comfortable doing so, recognizes that all of us are adults and we are colleagues, even though I may be older and more experienced. One group began by calling me "Sir" and never stopped. Ever since, I have discouraged that practice from the start.

Customs in names vary. Some trainees will prefer to be called by their family names, some by their given names. Some have nicknames. Preferences can vary within national groups. In the same course, we had one Bangladeshi who wanted to be known by his family name (without Mr.) and others who asked us to use their given names. Our Chinese trainees generally wanted to be called by their family names, but one young woman was pleased when, after a few weeks, we switched to her given name. Some trainees will ask to be known by abbreviated names or nicknames.

At IRRI, with as many as 10 different countries and languages represented in a course, I used another device to get people talking. For the first few weeks, each day started with a lesson in how to say "Good morning" or "hello" or some other simple phrase in one person's language. Next day we would greet each other in the new way. Trainees took turn teaching us. The unfamiliar words sometimes caused laughter, but just as often they prompted a few minutes of serious discussion about the language. This never took more than two or three minutes, and started the day with a bit of a game. By the time trainees got tired of that, we were ready to do morning push-up exercises, which also guaranteed that the day would begin with a short general discussion.

Work in groups

Some exercises were assigned to be done in groups of three or four people. The groups were changed each time, so that trainees got to know one another by working together. It also meant that trainees who were less fluent in English could be helped by those more fluent. That was especially important in the exercises following units 5.2 and 5.3, which involve a good deal of reading and revision in English.

The room, as already noted, should be arranged to encourage interaction within the group. Social events are also important—a chance to get away from work during an intensive course. There must be some break from work on weekends, and that will usually require organization if trainees are strangers to the area. An all-day excursion to a scenic spot, parties, and sports should all be considered.

Personal conflicts sometimes arise, but in my experience there have been remarkably few. There were only two serious conflicts at IRRI, and one of those was resolved quietly and imaginatively by the group itself. The saving grace may be that editors like talking about editing no matter where they come from. The trainees I have met have all been highly motivated As a result, people from totally different cultures, or even from countries that were in conflict, worked closely side by side and were mutually supportive.

4
Planning curricula

Units as building blocks

The modules and units in the training manual follow a logical order, but they need not all be used and they need not be used in that order. They should be considered as building blocks that can be combined in many ways to meet particular needs.

In their entirety, they provide the material for a course of about 10 or 12 weeks. Selected items can be used for shorter courses of one, two, or three weeks, or even for workshops of a single day. The shorter courses can be directed to a particular subject, for example, editing specialized publications, or editing for non-specialists, or editing newsletters, or any one of the subjects of the individual modules. Some sample curricula appear later in this volume. Many others can be devised.

To avoid repetition of material, many units contain references to other units. In selecting units to form a course, trainers should watch for such references. If necessary, cross-references should be removed when units are copied or translated.

In general, I found it advisable to deal with language-oriented subjects in the morning, when trainees were fresh. After lunch, attention might wander or people grow sleepy. As much as possible I used the afternoons for the more active or technical subjects—illustration and print production for example—and project workshops.

The first two modules were planned to meet the special needs of international training, involving people from several cultures and languages. Module 1 deals with matters that are common to publication in any language: the nature of communication and the relationship between authors, editors, and readers. Units 1.2–1.4 in particular are, I believe, basic to any course and a good beginning for most.

Module 2 begins with two units about the fundamental nature of language. Their discussion of abstraction introduces the more practical unit 2.3. In short courses the first two units can be omitted. Units 2.3–2.5 deal with issues common to writing in many languages, but not in all; .hey are unavoidably oriented toward English, and instructors working in other languages must consider carefully how much of them is applicable. The readability test in unit 2.6 is valid only for English.

Modules 3—11 should be useful for editors working in any language, although practices may vary from place to place.

At IRRI, I preferred to follow the discussion of language in Module 2 with the application of those principles in Module 5.

The number of hours each unit requires will depend on the trainer, the trainees, and the nature of the course. In the long IRRI course, we allowed half a day for most units, to provide ample time for discussion and, afterward, for work on exercises and projects. In shorter courses, units must be compressed, and two or three might be covered in half a day.

Even in highly motivated groups, attention tends to wander after an hour or an hour and a half. We always stopped for about 15 minutes halfway through the lesson period. At that time, trainees could get tea, coffee, or other drinks and those who wanted to could have a cigarette.

The units in Module 1 are relatively short. At IRRI, this was useful because it gave time for trainees who had traveled hundreds or, in many cases, thousands of miles a chance during the first few mornings to become acclimatized to Philippine heat and humidity and recover from jet lag. If trainees have come relatively short distances, these units are particularly easy to compress into less time. On the other hand, other units may need more than half a day. Unit 9.1 in particular might best be taught in two steps, with a simple exercise in estimating at the end of the first session. I did it all in one afternoon, followed by an afternoon discussing the exercise, which was estimating the length of a complex manuscript, and some trainees said they found it too concentrated a lesson.

Photography is a good topic for the first few afternoons. It is an attractive, non-verbal subject, and if one or two Polaroid cameras are available, an afternoon of photo assignments gets everyone working together in a pleasant way.

Sample schedules

Four sample schedules appear later in this volume. They provide examples of how the units may be combined under different circumstances to meet different needs.

A ten-week schedule

The sample ten-week schedule illustrates the difference that is possible between the manual, which is organized in the logic of a book, and a curriculum, which is organized by the logic of a dynamic course.

Week 1 begins the course with fundamentals in the mornings and in the afternoons a practical subject involving interaction and creativity.

Week 2 deals with two other basic topics: the use of words and the use of type. Type has been separated from other design units and introduced this early because it is complex enough to be treated on its own; because

it is highly visual and thus a good relief from the morning concentration on language; and because some knowledge of type is basic to many decisions of editorial style. Unit 7.3 is divided in two: it has too many details to be absorbed in a single lesson if trainees are not already familiar with at least some of the concepts.

Week 3, in the mornings, applies the previous lessons in effective writing to the specific problem of reaching the non-specialist. In the afternoons, discussion moves from type to the processes of print production, including a field trip to a printer.

In Week 4, all this is put into practice with a group production of a newsletter. The nature of the newsletter can be decided by the trainer or the group; but it might well include the interviews that have been assigned as an exercise during the previous weekend, and it should probably not be more than four printed pages. Note that unit 5.5 has been turned into an exercise: the case history is given out the day before the lesson and trainees are asked to comment on what went wrong. The "consultant's report," which forms the second half of that unit, is handed out only after the discussion next day.

Week 4 has been structured with afternoon workshops so that the newsletter can be prepared in parallel with the lessons. On Tuesday afternoon, the trainees plan the distribution, contents, and general design of the publication. They should also set up an editorial organization and divide responsibilities under a managing editor. Then they can move on to writing and editing the contents, taking photographs or preparing other illustrations, and writing headlines. The plan works well if the newsletter is to be printed from camera copy produced on a word processor; with secretarial backup, proof (computer printout) of the text can be provided and revised quickly. By Friday morning, if the newsletter is not too ambitious, first proof should be complete for at least much of the text, and dummying can begin. Dummying is best taught step by step, with everyone involved in each step: all thus experience the physical process of cutting and pasting, and all can participate in editing copy to fit a given space. More than likely, editing and dummying will have to continue over the weekend. Final revisions to copy should go into the word processor on Monday morning, and in a last workshop that afternoon copy and dummy should be OK'd for printing. The newsletter project will take a good deal of time and effort, but it brings into practice everything learned to date.

In Week 5, the morning sessions are about manuscript editing. Many of the principles will already have been practiced, and some teaching done, in editing the newsletter. Units 3.1-3.5 build on that experience and add to it. In the afternoons some time may be allowed for editing individual projects. The schedule assumes that individual projects will be of medium length, perhaps large folders or eight-page booklets. This week also deals with estimating manuscript length, a first step in designing any publication.

Week 6 is devoted to design—discussion in the morning, workshops in the afternoon. The Monday afternoon session should be no more than an introduction to the design process, not an exhaustive discussion. The unit gives the trainees a checklist of things to do as the week progresses.

After that, the schedule follows logically. If the emphasis of the course is on scientific publication and most of the projects are technical in nature, Module 4 should be discussed earlier than Week 7.

Weeks 7 and 8 devote most afternoons to workshops in which trainees work on their projects. This time could be used in other ways if workshops are not needed. But both trainer and trainees will need time to get the projects in perfect order; and if the projects are of even medium length, this can't all be done in evenings or weekends. The trainer in particular must have ample time during working hours to go over details with the trainees individually.

By the end of Week 8, the projects must be completely edited, designed, and proofread, ready for final assembly and printing. (The deadline is purely arbitrary in this example. Production deadlines should be established before the course begins. They will depend on the number and nature of the projects; whether composition will be by typewriter. word processor, or typesetting: the resources available; and other pressures on those resources.)

By this point the trainees need a break. The schedule gives them Monday off. If the budget allows, they could take a three-day field trip, combining sightseeing with a visit to a publishing house, research institute, extension agency. or other related organizations.

Weeks 9 and 10 cover subjects that are not strictly editorial but should concern editors, especially those who work in small departments and are responsible for budgets and distribution. The afternoon of the day before graduation provides an opportunity to discuss the course—what was successful and what could be improved. The course concludes with a graduation ceremony and reception.

A two-week schedule

In shorter courses, content will have to be more sharply focused. There will be less time to draw information from the trainees, and thus there must be more direct instruction from the trainer. Several units may have to be covered in a half-day; many details will have to be ignored or dealt with very quickly. Even so, time should be allowed for discussion, for exercises, and for trainees to ask questions and speak from their own experiences.

The sample two-week course is designed for editors who publish the results of research for non-specialists. Their intended readers may be policy makers, administrators, practitioners, extension workers, public health workers, social workers, teachers, farmers, families, other groups, or a broad general public. They need to know the basics of effective, economical communication in print. Their project is a simple two-fold or three-fold folder.

The units may have to be modified slightly for this purpose. These editors may not work with authors as such, for example. Unit 3.6 may be amended to "Working with specialists." The principles generally are the same.

With further minor modification, the course and the units can be addressed directly to researchers who are concerned with the broad dissemination of the results of their work. In such cases, for example, Units 1.1 and 1.9 might be used to explain the often-misunderstood role of the editor. The advice in Module 2 should be directed to authors instead of editors.

The two-week schedule is divided into quarter-days, with a suggestion of what might be covered before and after each break. Some periods are very full. It will not always be possible to cover every point in a complex module, but the most important principles should be discussed. It is more profitable to examine the major aspects of any unit in depth than to deal with every point superficially. When the printed unit is given out after the class, the trainees will have all the information to read and next day can ask questions if they wish.

The exercises for units 2.3–2.5 need not be used in full. Selected questions or sentences can be assigned for discussion next morning. In the second week, sentences not previously assigned can be used as morning push-ups.

The two half-days on design are particularly crowded, and only brief introductions to principles should be attempted in class. The distinction between serif and sans serif faces, and the use of typographic guideposts, to take two examples, are more important than understanding the ambiguity of an em or the nature of paper grain. Design has been given so much time in the schedule because the subject invariably attracts interest. In every short course we have given, trainees have asked to learn more about design than we had planned. Perhaps this is because the subject is not widely taught. Many of the principles are entirely new to trainees we have met.

(The other concept that seems most novel is simplicity in language. Far too many trainees who have learned English as a second language have apparently been taught that good English is complex and indirect. They say of Module 2, "But this is the opposite of what our teachers said!" Of course, too many people who have learned English as a first language have the same misconception.)

Module 8 has been omitted. Most of the essential information can be explained during the field trip, while the class is actually seeing the processes of composition, assembly, and printing. The units might be given cut afterwards.

The schedule incorporates a simple project, possibly a two-fold folder. As with a major project, its progress should follow class discussions. There is time for planning, designing, and editing, but the production inevitably will be rushed. The schedule assumes that setting will be by electric typewriter or perhaps a desktop publishing unit so that proof can be returned for checking and dummying the next afternoon, and that after assembly the printing can also be done overnight, by photocopier or small offset duplicator. In such a short time, only a limited number of projects can be produced, so work on them will likely have to be in groups.

Shorter schedules

The sample one-week schedule is intended for editors attached to specialized research publications. The nature and design of their journals will probably be well established. Their readership will also be known; but unit 1.6 is included because of the importance, even to specialized publications, of periodic surveys. (If there is time or interest, unit 3.10, evaluating publications, might be added.)

The schedule concentrates on language, organization, and style. The principles of copyright can be reduced to the importance of securing copyright in articles and of obtaining permission to reprint matter that is in copyright. Illustration, as planned, is restricted to line art: if the trainees' journals use many photographs, the relevant (i.e., more technical) criteria can be added from unit 6.5.

There is no time for a project, but half Tuesday morning is devoted to discussing exercises 2.3 and 2.4 to ensure some practice in editing. Exercise 2.5 will be assigned overnight and discussed on Wednesday morning, and there could be push-ups on the last two days.

The sample one-day schedule is even more concentrated. It is designed specifically for editors of newsletters. For many of them it will be a refresher course in basics.

The schedule looks crowded. It is not quite as bad as it seems. The three units from Module 1 can be covered in a short introduction. There is no time for exercises, but at the end of the day some practice with a Polaroid camera could prove useful.

On the other hand, the same material could be used in separate one-day workshops, one devoted entirely to editing, the other some time later (or earlier) on photographs.

The sample schedules have not been tested exactly as they appear in this volume. They derive from other schedules that were designed for specific groups of trainees. Each course or workshop should be tailored to meet the needs of its particular constituency.

The adapting should continue throughout the course itself. I have always hesitated to hand out in advance detailed schedules of what we will be discussing each day. One topic may be seen to need extra time: then something else may have to be dropped. Questions from trainees may suggest a topic that had not been previously included. Rigid schedules do not serve needs. In planning, as in discussion, flexibility is essential.

Equipment

The two most important pieces of equipment have already been mentioned: a blackboard or its equivalent, and an overhead projector and screen.

Overhead projector transparencies can be produced from typewritten sheets on many kinds of office photocopier. In discussing editorial exercises, typing is easier to read than handwriting and, more important, looks like manuscript. When no copying was available, handwritten sheets have proved satisfactory.

The pens for overhead projectors come in different weights: narrow ones are best fix editing. The ink may be permanent or water-soluble. I prefer the latter because changes can be made during class, using a damp tissue as an eraser, and typewritten transparencies can be used repeatedly. Different colors are available and can be used to give variety or indicate different kinds of changes. (Different colors of chalk or whiteboard markers are also useful.)

The classroom should be equipped with a dictionary and, if possible, one or more copies of an appropriate style guide.

These are the essentials. Other equipment needed will depend on the nature of the course.

To produce a printed project, a minimum is an electric typewriter to produce camera copy, plus some means of reproduction.

For lessons in photography, a Polaroid camera is useful, as is a 35 mm camera with flash. Sometimes 35 mm slide shows are available and require a projector.

At IRRI, the budget provided for extensive supplies. These included for each trainee

- a manual typewriter for use during the course. (The typewriter was intended as a convenience for the trainees, but typewritten copy is also easier for the trainer to review. Most trainees know how to type, and others learned.)

- paper, pencils, ballpoint pens, notebooks, and looseleaf binders.

- seven reference books: a paperback *Merriam-Webster Dictionary:* the *Chicago Manual of Style;* the *CBE Style Manual,* 4th edition; *Pocket Pal: Design with Type* by Carl Dair; *Graphics Simplified* by A. J. MacGregor; and *Author and Editor at Work* by Elsie Myers Stainton. (The University of Chicago Press gave a substantial discount on its style guide: the Council of Biology Editors donated the copies of its guide: the copies of the last three titles were also donated by the publisher, University of Toronto Press.) Most of these books, with the publishers' addresses, appear in the manual in the list of further-readings.

- drawing board, T-square, 45° and 60°/30° degree triangles, three sizes of technical pens (.3 mm, .6 mm, and .8 mm), India ink, transfer lettering in two styles (serif and sans serif) and two sizes (24 and 48 pt), transfer tones in three screens, stripping knife. (These were used for exercises in illustration and for the design and layout of projects.)

- pica rule, scaling wheel, and hand calculator.

Apart from the typewriter, drawing board, and T-square, these items for personal use were given to the trainees to keep. We hoped in this way to equip them with a small reference shelf and with basic tools back home. Such generosity would normally be impossible.

Ancillary equipment included a large dictionary and recent copies of the journal *Scholarly Publishing* for reference; sample publications from IRRI and IDRC; ribbons and erasing tape for the manual typewriters; masking tape, tracing paper, and similar art supplies for illustration and layout. We also had the use of photocopying and duplicating equipment, photography services, and a large reference library.

5
Evaluation and closing

Evaluation

Testing skills in editing is difficult because, as has been said repeatedly, there is rarely a single "right" answer. Skills in the more mechanical aspects of the work—imposing accuracy and consistency in style, spelling, and grammar. for example—can be tested quantitatively; but editorial revision for language and organization, and the still more creative function of planning, are subjective. Test results are also affected by the trainee's familiarity with the language of instruction and testing. At IRRI, we were dealing with trainees whose mastery of English varied from excellent to poor; inevitably, there was a high correlation between individual scores and English fluency in any test that involved language. Even in tests of individual performance, some apparent improvement in editing skills might reflect only increased fluency in English after weeks of exposure. On the other hand, true improvement might be offset by fatigue at the end of so intensive a course. In any case, testing was never a major part of the IRRI project.

Trainers may wish nevertheless to give a benchmark test of editing skills at the beginning and end of the course, to get some measure of trainees' improvement. Such a test was used at IRRI but was specific to the IRRI environment. Far too much of it was subjective, moreover, to produce significant quantifiable results. Its main use was at the beginning of the course, to give some indication of individual knowledge, strengths, and weaknesses.

At IRRI, tests were given only in the first few weeks. They were intended to test the training process rather than the trainees—that is, to see whether the material discussed in class was being understood and retained. After a few weeks, the practical projects proved sufficient measure of comprehension and skills.

Tests should reflect the emphasis of any particular course. Trainers can find raw material for tests in the exercises and push-ups.

Because of the difficulty of testing, no grades were given for the IRRI course. All trainees received the same certificate upon graduation, recognizing that they had completed the course satisfactorily.

The course itself was evaluated more thoroughly. Before graduating, each trainee was required to complete, anonymously and confidentially,

an extensive questionnaire prepared by an IDRC Program Officer. The results were aggregated by a research assistant who had no connection with the project, and her tabulations were used in planning further courses. A similar evaluation form was used for some courses outside IRRI as well. A sample evaluation questionnaire is appended.

At the end

Any course should end with a little ceremony. The trainees have worked hard and deserve recognition.

The simplest form is a short graduation ceremony, at which certificates are presented and a few speeches given. A guest speaker (perhaps the director of the host institution) may give the major speech and present the certificates. This is a last chance, too, for the training leader to address the group.

The ceremony may be followed by refreshments or a party.

At IRRI, we did a little more. Graduation took place in the afternoon. That morning, each trainee presented his or her printed project to a panel of the institute's editors and its publication production manager. They explained the purpose of the publications, the problems they had met, the ways they had solved those problems, and finally what they had learned in the process. Their summaries provided useful information for further training and reinforced their own sense of accomplishment.

The closing ceremonies are part of the unwritten agenda of any training course of this kind. Too often, editors are considered junior staff and suffer from lack of evident formal training in their profession. A course should do more than equip them with new skills and understanding. They should leave it with greater self-confidence and a sense of professionalism.

6
Sample exercises

These exercises are presented in a form that can be photocopied and used in courses and workshops, if desired. They are keyed to units in the training manual. Most are intended to be assigned immediately after the unit is discussed, to reinforce its lessons. A few (for example, the exercises for units 5.1, 5.3, and 5.5) may be assigned before the unit is discussed in order to get trainees thinking about the subject. For some, trainers must find their own examples, suitable for the particular workshop and location. Before assigning exercises, trainers should review the notes on the exercises, which begin on page 69.

1.2 Communicating

Attached to this sheet are extracts from eight publications: books, pamphlets, or journals. They are all about agriculture or plants, but they were written for different groups of readers.

1. What type of reader do you think each extract is intended for? Try to be as specific as possible.

2. What clues helped you to identify the intended reader?

3. Can you suggest from this any general rules about writing for different kinds of readers?

1.4 Planning for publication

Here are six publications from our host institution. For each, try to determine

- who it was written for (and imagine a typical reader)
- where the readers live
- why it was published
- what it says (summarized in a single sentence)
- how long it will be of value

Then describe how the publication was planned to meet these intentions. Can you suggest any way it might be changed to meet these intentions more effectively?

Be prepared to discuss your analysis with the editors of our host institution.

1.5 The right words for the reader

Here are four extracts from different publications intended for different readerships. For each extract

1. describe the kind of reader you think the author intended to reach;

2. use the five questions in "the right words for the reader" to examine the writing and decide whether it is appropriate for the intended readership;

3. point out any words or expressions that you think could be changed to make the writing more effective, and suggest new wordings.

1.7 Asking authors about readers

Prepare a set of 8 to 15 questions which you can give to authors when you go home, asking them about their manuscripts and about the readers they wish to reach.

2.1 About words

A. Rearrange the following statements in decreasing order of abstraction. The most abstract, general statements should be at the beginning. The most concrete, specific statement should be at the end.

1. Ahmed makes sure all our publications are of high quality.

2. Ahmed edited one of my research reports yesterday.

3. Ahmed edits the text of our publications to meet international standards.

4. Ahmed is useful to have at the institute.

5. Ahmed is a good colleague.

6. Ahmed pays special attention to research reports.

B. Describe your dormitory room as well as you can in 5 words. Then describe it in 50 words. What difference do you find in levels of abstraction? Which description gives a clearer picture?

2.2 More about words

A. Which of these statements are purely factual and can be proved? Which cannot be proved or disproved?

1. Mrs. Ching has a kind heart.

2. Ian Montagnes was born in Canada.

3. Vicky loves her father.

4. IRRI was founded in 1960 and has about 2,500 employees.

5. The research at IRRI is important.

6. Mr. Lee never drinks beer.

7. Emmy reads only good books.

B. The following classified advertisements appeared in the *Manila Bulletin Today* of 1 August 1985. Underline phrases that are not purely factual.

Industrial Oxygen Refilling
P35.00 per cyl. tank.
Saturdays and Sundays
AGE TRADING 39
Mirasol-Cubao
Quezon City

BAKAWAN CHARCOAL
Available in volume
Call 8176282 or 8184426

WANTED: JOBBER-DEALER
*Must own delivery van
*To sell toyo, patis, suka,
catsup, hot sauce
*25% commission,
cash with order basis
Tel. 922-2458

Rights for sale.
Nice location.
Good for restaurant,
hardware, drugstore.
Display area.
Call 237437

SWISS SINGLE MAN
Handsome, secure,
with sense of humour,
plays tennis and likes
skiing. Looking for
Filipina lady, from
24 to 32 yrs. old.
Height between 5'4"-5'6".
Send bio-data and photo
to (. . .)

Pretty escorts anywhere
582528. Honest

C. Write ten words describing someone you know. How many of the words can be proved? How many are judgments or emotional and thus are more than facts?

2.3 Using concrete words

A. Most of the following words or phrases appear in papers written by scientists. For each, suggest a simpler or more direct word or expression. (For example, for "commence" you might suggest "begin" or "start.")

commence _____ prior to that time _____

despite the fact that _____ close proximity to _____

an abundance of _____ in the event that _____

remunerate _____ purchase _____

frequently _____ magnitude _____

demonstrate _____ for the purpose of _____

in such manner as to _____ held a meeting _____

in the majority _____ utilization _____

of cases _____ at the present time _____

in the initial _____ in view of the fact _____

instance _____ terminate _____

requested _____ initiate _____

employ _____ sufficient _____

make enquiry regarding _____ is equipped with _____

the present paper _____ with a small amount of _____

inquire _____ effort _____

B. Edit the description of your dormitory room that you prepared earlier. Keep it to 50 words but increase the number of concrete words, or choose other concrete words, to give a clearer description.

C. Edit the following sentences, using the rules in this lesson. Make any other improvements you think may help the reader. Try to revise on this sheet, as if it were a manuscript.

1. These ideas have very many different origins.
2. The herd furnished a sufficient quantity of milk.
3. The use of a tractor facilitates plowing.
4. Weedicides can effectively suppress the weeds.
5. It is my opinion that the department should now embrace a different policy direction.
6. The group's management and staff are given periodic feedback so that they can institute timely modifications in group operations and consequently optimize productivity.
7. The advent and employment of modern farm machinery has made farming easier.
8. Greater ease in comprehension of the author-produced communication may be stated as the essential goal of the editorial worker.

2.4 Building forceful sentences

A. Rewrite the following sentences, making the verbs active. Try to revise on this sheet, as if it were a manuscript. Make any other improvements you think are desirable.

1. My theory is proved with this evidence.
2. A review was done of the relevant regulations.
3. At present, the weeding is done manually by the farmer.
4. The database is a store of information.
5. The annual report was written by the director general himself.
6. The data, showing a 25 percent growth in productivity, are summarized in Table 4.
7. From the present experiment, it could be concluded that pest control might be achieved effectively through natural enemies.
8. In this study, a fourth approach is taken to find a solution.
9. Some damage by rats was experienced toward the end of the second experiment.
10. Continuous freshwater supply is necessary in the hatchery.
11. A field day will be held on October 15 by the Ministry using its extension specialists.

B. Review the following sentences. Eliminate strings of nouns or phrases, make verbs active, tie the agent to the verb, and suggest other changes you feel would make the sentence more readable. Try to revise on the assignment sheet.

1. Soil moisture status governs the success of chemical weed control in upland rice.
2. Photographic subject acquisition policies will be determined by the information department head.
3. The main goal of this article is to describe text comprehension processes.
4. Data from tropical Africa were not included, where an average of 5.5 million cases have been reported in recent years.
5. Normally, all mosquitoes are not killed in an effective spraying program.
6. Extension field worker capability for providing correct technical content input is essential to the success of agricultural education programs.
7. Preliminary trials of strip tillage machinery showed that a specially designed tine pulled by a 4 kw (6 hp) hand tractor could achieve acceptable soil disturbance to 30 cm depth.
8. Examination of present policies and procedures of implementation for standardization of equipment and materials used in three regions over the period of two years was carried out.

2.5 Rules for readability

A. Break the following long sentences into two or more sentences. Edit on the assignment sheets.

1. The international proliferation of drugs--more than 10,000 prescription and over 100,000 non-prescription drugs--instead of being a boon, has created major problems for developing countries which cannot regulate their quality, sale, or distribution.
2. Facing a small-scale field trial with the larvicide temephos (Abate) against Mansonia mosquitoes in a pool covered with a rich aquatic flora, predominantly Hanguana *malayanum* var. aquatica, it became necessary to reflect on what formulation would be the most appropriate for application.
3. We are assessing the impact of new rice technology on rice production, income, income distribution, employment, and social welfare so that biochemical and mechanical technology to meet the relevant needs of rice farmers can be designed.
4. Although planting of disease-free seeds and treating the seeds with hot water are very practical and effective control measures, the development of a spray program with fungicides is likely to offer a quicker solution to the problem.
5. The brooding period which lasts right after the chicks are taken out of the incubator and lasts from two to as long as 6 weeks is the process of providing chicks with outside heat to help maintain their body temperature.
6. To be sure you have gotten a chance to see each employee's card at the time he is certified, I would advise each of you to initial on the same line as the supervisor with your initial, so that you can definitely know whether or not you have seen the card.

7. Furthering the executive committee's recent authorization of making arrangements with Mr. William Smith, who will conduct two clinics with the purpose of simplifying and making readable written material in the institute, the director general requests that samples of all written material, typical of that prepared by each department, be forwarded to him by Monday in order that it can be given to Mr. Smith for analysis.

B. Revise the following sentences to give them added force by using short simple words and strong verbs. Follow other rules for readability as well.

1. The three weed species had different rates of development.
2. Rice culture under permanently inundated conditions is an effective method for suppressing weed growth.
3. The data reflecting increased crop yields of as much as 10 percent are shown in Figure 4.
4. There must be thorough preparation of the specimen sections by the laboratory personnel.
5. This discrepancy in the data demands checking by the researcher.
6. It is our belief that there should be consultation by the administrators with the staff before changes in office regulations aremade.
7. A very significant contribution to the literature on the subject is Khan's explanation, written in 1984, of the causes for emigration of unemployed workers from areas with a lack of sufficient capital.
8. There should be no hesitation in regard to saying no.
9. He was not very often at work on time.

C. Remove unnecessary words from the following sentences:

1. During that period of time, the stomach area became pink in color and tender in feeling.
2. The holes must be aligned in an accurate manner.
3. The book was 2 kg in weight.
4. We investigated many different varieties of wheat.

2.6 Testing readability

Test the readability of the following passage using the Flesch formula.
Then edit the passage to increase its readability. Test your new version.

The high per capita rice consumption areas of the world are generally the developing countries where the people have relatively low levels of living. Where the per capita consumption level is 100 to 150 kilos annually, a very small difference in price means a large change in family income for the year. As a result, such areas are very price-conscious and the usual consumer buys the lowest-priced rice to be found, other conditions being equal or nearly so. In world rice markets these areas want volume at reasonable prices and pay little for quality differences. In the domestic production and marketing in many rice-deficit countries, there are some but limited variations in rice prices according to quality.

An unusual situation has developed in some West African nations in that their shortage of foreign exchange has caused them to shop around for the lowest possible price for imported rice. Some have shifted to buying 100 percent broken rice for direct consumption. The traditional use of broken rice has been for the manufacture of beer and for animal feeds. This new demand has caused a shortage and an increase in the world price of broken rice from a level of about 75 per cent. In some countries the continued consumption of large quantities of broken rice has so accustomed the consumers to the product that they have developed a preference for it and domestic production has shifted to the practice of adjusting the mills to break the product almost completely to meet consumer demand.

3.1 What to do first

The paragraph at the bottom of this page comes from a manuscript that has been accepted for publication. It is typical of the manuscript as a whole. The manuscript has been accepted for publication. You, as an editor, have just received it and now must consider what you will do next.

The author is a full-time pathologist. The manuscript was written for farmers, to help them recognize diseases in their crops.

1. Go through the steps an editor must take before editing.

2 List some questions you want to ask the author.

3. Draft a short letter to the author, explaining your concerns and how you plan to proceed.

Sheath rot - Infection occurs on the uppermost leaf sheath at late booting stage. Early symptoms are oblong to irregular spots, 0.5—1.5 cm long, with gray centers and brown margins or gray brown throughout. Lesions enlarge, often connect, and may affect the entire leaf sheath. Severe infection may cause panicles to be only partially exserted. Unemerged panicles are rotted and show abundant powdery fungus growth inside the leaf sheath. Partially emerged panicles may produce poorly filled grains. Infected plants may be infested with stem borers or have other injuries on the lower stems. The disease is associated with virus—infectedplants.

3.2 Improving organization

Attached is a short article on an important topic. Consider it as a manuscript which you, an editor, have just received. It has flaws, but the topic is so important that you want to see it published. Besides, it was written by a senior officer in your institution whom you cannot afford to offend.

1. Prepare an outline of the article. Indicate strengths and weaknesses in its organization. Suggest ways it could be improved.

2. Carry out a Flesch readability test on a sample of 100 words.

3. Edit the manuscript to make it more effective and more readable. Suggest changes in the organization, if you feel that is desirable. Use the guidelines for effective writing. In particular, change nouns into verbs, make passive verbs into active verbs, use simple, direct words, and eliminate unnecessary words.

4. Suggest a title for the article.

5. Carry out a Flesch readability test on your revised version. What improvement have you achieved?

Explain simply

If I were to be asked what single thing scientists could do to improve their public image, avoid all the criticism they face for what they do, and make people realize just how great are their many achievements, I would say, "Explain yourselves simply."

We are living in a world where people spend much of their time being afraid, consciously or subconsciously, and science has a lot to do with it. People say that science has given us the Atom Bomb, pollution, drugs, and many other problems. They say that scientists keep telling us that the world is threatened by both overpopulation and killing diseases, that it is either turning into a desert because trees are being cut or is going to be flooded because temperatures are rising. They complain that scientists are spending too much time and far too much money on research about the beginning of the universe or things they can't see. They are afraid of what science does and what science predicts. Some of these fears are justified and some are not. The public fears some aspects of modern technology because they can't understand it or think they understand it too well.

Communication between most scientists and the public is very poor because of many factors. Some scientists become so engrossed in their dedicated research that they overlook the need to tell the public about their present and past contributions to human welfare, and their future goals in this area. Others seem to feel that the popularization of research in language everyone can understand is not something a respectable scientist should do. More often, they fail in having enough time or the creative ability to explain what they do in words that will be relevant and meaningful to the man on the street. Because of lack of

information, the public has had little opportunity to feed its ideas and wishes into research planning. Unfortunately, because of limited association and communication between representatives of science and members of the press, the public is often given an uncomplimentary image of the scientific community.

It does not help that communication between scientists is also poor. Thus we find some parts of science attacking other areas in public and professional publications, without first trying to make peace between themselves in private. We see too some parts of science building vocabularies which are meaningful to them but difficult if not virtually impossible for other scientists, and the public, to comprehend. Thus broad areas of science are discredited in the public view and the individual scientist's ability to contribute to human welfare is diminished or eliminated.

We in science have been negligent. Our programs of communication are often inadequate, not viable, or non-existent. We have not found a way to communicate to the public our work, our accomplishments, and our aspirations. Perhaps we have not made sufficient efforts to invite consultation to discuss objectives and recognize limitations, and to set priorities for goals to insure that research is relevant to current needs.

This is not the moment to crawl into protective shells to weather the storm of criticism and the drought in funds. It is a time to devise and demonstrate new and viable programs to solve current and future problems.

It is time to build an agenda for action that will reverse the trends of the public press and the public perception of scientists. Let US do more to speak in public, talk with the press, and take part in

positive discussion groups. Let us work to exchange ideas and confirm our dedicated interest in the public welfare. Let us find ways to explain ourselves and our work in language that other people can understand without difficulty. Let us intensify our efforts to establish improved methods of communication among all branches of science and thus present science in total as a positive force for public welfare. Let us exercise imagination and creativity to find the examples and analogies that will pierce the complexities of the scientific language, and let us use the principles of writing that are employed by novelists and journalists that know how to reach the public.

Let us, above all, emphasize the fact that the future health and standard of living of the people of the world rest in putting technology to work for the public good. I say again, "Explain yourselves simply!"

4.4 Citations and reference

Here is a short extract from a manuscript. On the next page you will find information about the sources the author used. From that information, insert citations and prepare a list of references for this text using the following systems:

- name and year
- number
- number, with references in alphabetical order

Within each system, you may establish your own style for details (use of punctuation, placing of the date of publication, etc.). But be consistent in applying that style, and be prepared to defend your decisions.

A recent article discusses the ranking of journals. It argues that the tremendous proliferation of journals makes it impossible for professionals to examine all the periodicals available within any one discipline. In medicine, for example, it has been estimated that there are more than 8000 professional journals; in psychology, investigators have ranked between 60 and 400 journals. Yet the periodicals in any field do not contribute equally to the development of knowledge within it. Garfield has noted, for instance, that of the 2200 journals in science and technology, 250 of them (11 percent) provided almost half of all indexed references and that among the 565 most cited periodicals, the top 152 accounted for 50 percent of all citations to journal articles. One method of ranking journals is to give professionals in a discipline a list of journals and simply ask them to assign each journal a weight reflecting its quality or importance. One of the difficulties with this method is the generally low rate of response to such surveys. Although a rate of response of 80 percent has been reported in one such survey and one of 72 percent in another, more common response rates are between 35 and 50 percent.

References

line 1 "recent article"	Ralph A. Weisheit and Robert M. Regoli Ranking journals Scholarly Publishing vol. 15, no. 4, July 1984. pp. 313-25
line 4 "in medicine"	W. Broad and N. Wade Betrayers of the Truth: Fraud and Deceit in the Halls of Science New York: Touchstone Publishers, 1983
line 5 "in psychology"	K. C. Mace and H. D. Warner Ratings of psychology journals American Psychologist 28:184-6; 1973 and David Koulack and H. J. Keselman Ratings of psychology journals by members of the American Psychological Association American Psychologist 30: 1049-53; 1975
line 8 "Garfield has noted"	E. A. Garfield Citation analysis as a tool in journal evaluation Science 178:471-9, 1972
line 17 "80 per cent"	K. C. Mace and H. D. Warner (as above)
line 18 "72 per cent"	David A. Fabianic Perceived scholarship and readership of criminal justice journals Journal of Police Science and Administration 8:15-20; 1980
line 19 "35 & 50 per cent"	N. D. Glenn American sociologists' evaluations of 63 journals American Sociologist 6:298-303; 1971 and David Koulack and H. J. Keselman (as above)

4.5 Edit this table, following the guidelines in unit 4.5.

North American and Other Circulation, Average and Median Numbem of Subscriptions and Relative Shares, for 120 Journals, by Size Bracket and Type of Publisher, with Averacre Number of Pages, 1987

			Average					Median				
	Number of Journals	Average Number of Pages	North America	Per cent	Rest of World	Per cent	Total	North America	Per cent	Rest of World	Per cent	Total
By size bracket												
Circulation 6,000 or above	25	2,140	8,530	73.3	3,100	26.7	11,630	5,740	68.4	2,650	31.6	8,390
Circulation between 2,500 and 5,999	33	1,470	2,340	61.4	1,470	38.6	3,810	2,290	63.3	1,330	36.7	3,620
Circulation between 1,000 and 2,499	39	1,320	750	54.0	640	46.0	1,390	820	57.3	610	42.7	1,430
Circulation below 1,000	23	750	390	60.9	250	39.1	640	330	55.8	260	44.1	590
All strata	120	1,420	2,740	67.5	1,310	32.3	4,050	1,540	67.2	750	32.8	2,290
Type of publisher												
Professional society	51	1,710	4,320	73.6	1,550	26.4	5,870	3,230	65.9	1,670	34.1	4,900
Research institute	21	460	1,150	42.8	1,540	57.2	2,690	1,090	44.7	1,350	55.3	2,440
Comercial publisher	48	1,540	1,760	64.9	950	35.1	2,710	1,480	72.9	550	27.1	2,030
All publishers	120	1,420	2,740	67.7	1,310	32.3	4,050	1,540	67.2	750	32.8	2,290

Source: EDPUB Associates, Inc.

5.1 Planning to reach the non-specialist

In preparation for tomorrow's class, read the following articles. We will use them as examples in discussing ways to help non-specialists understand the results of research. Look for techniques that are effective in reaching non-specialists. Look for ways these articles succeed or fail in this goal.

5.2 Helping the non-specialist understand

Here is a manuscript that was prepared by a scientist who writes clearly about an important topic. You are an editor of a publication that is aimed at the general public. In its articles, your publication tries to follow the guidelines set out in unit 5.2. Most of its articles are only about half as long as this manuscript.
Read the entire manuscript and consider how it might be revised to reach non-specialists more effectively. If you want further details, draft questions to ask the author. Consider what might be omitted to make the article the right length for your publication. Write the first 300-400 words of a revised version, to show the approach you would take. Be prepared to explain why you have taken this approach and why it is more effective than the original.

The PVC Pump: A Potential Supplier of Clean Water for Rural People in Developing Countries

by Don Sharp

Associate Director, Water Supply and Sanitation Health Sciences Division, IDRC

Three quarters of the estimated three billion people living in developing countries do not have access to adequate potable water supplies or sanitation facilities. In some places, such as the Sahel, water is not available without complex technology and high-cost construction. In many cities of the Third World piped water is available but is inefficiently used and inequitably distributed. Although these water systems are expensive and their cost is a contributing factor to the national debt, they often benefit only a select proportion of the population.

Both of these problems are difficult to solve, but the majority of the world's population lives in rural areas where water is available, but is far from home and/or polluted with disease-carrying organisms. This situation does have a solution and IDRC has been a pioneer in

developing an inexpensive and easily maintained handpump to supply villagers with clean water close to home.

The traditional local water hole, pond, creek, or river serves reasonably well when population density is low. People, most often women, have carried water up long hills for thousands of years but as our world becomes crowded, many of these sources of water have also become sources of cholera and other water-borne diseases.

Luckily, almost every place in the world has a natural filter that can produce clean, safe water. That filter is the soil and the source of clean water is found below the ground. In order to tap the groundwater a well must be dug or drilled, and to keep the water that collects there free from contamination it must be sealed off from the surface and pumped from the well.

The development of reliable handpumps that can be locally produced, installed, and maintained at a reasonable price would be a major step toward providing reliable safe drinking water. The average pump costs about CA$200 and more than 20 million of them are needed--the task is enormous. If any significant headway is to be made, it will not be just through governments and aid agencies but through the efforts of the rural people themselves.

One of the most important problems in rural water supply programs is the high failure rate of conventional manual pumps. The pumps break down because they were not designed for the level of stress and abuse they routinely receive in the rural areas of developing countries. Because the materials from which conventional pumps are made--mainly cast iron and steel--are not only expensive, but are not readily available locally, many developing countries must rely on imported pumps

and parts supplied by international and bilateral donors. This presents difficulties in terms of maintenance requirements and procurement of spare parts.

Since 1976, IDRC has been supporting research on the development of more effective pumping systems for rural water supplies. The implications of new materials and improved pump designs were examined systematically. In view of the widespread introduction of plastics technology that has taken place in developing countries in the last decade, particular attention was focused on the polymer resins, specifically polyvinyl chloride (PVC) and polyethylene (PE). Both materials are widely available throughout Africa and Asia. In many respects, plastics technology is to developing countries what cast iron was to industrialized countries many years ago. The vast potential of plastics for use in handpump components has only recently been explored.

The IDRC-sponsored design work centered on developing a simple, low-cost PVC piston and foot valve assembly for a manual, shallow-well pump. These belowground components--the piston and foot valve--were designed to be interchangeable, thus saving labour costs in manufacture, simplifying maintenance procedures, and keeping the required number of parts to a minimum.

Early development research was carried out by a Canadian university, the University of Waterloo, and was completed in April 1978. The prototype pump assembly was then tested in England as part of a project sponsored by Britain's Overseas Development Ministry.

The Waterloo design was found to be reliable and efficient and differed from the others in the testing program in that it was designed specifically for manufacture in developing countries, using existing, locally available resources.

Believing that straight transfers of technology are rarely successful, IDRC has a three-phase program for introducing the pumps to the potential users. Phase I was the field testing of the pump in Malaysia, the Philippines, Sri Lanka, and Thailand in Asia and Ethiopia and Malawi in Africa. Research projects within the six countries tested the Waterloo design under a variety of environmental conditions, and appraised the appropriateness of the pump for local manufacture and for village level according to the availability of local materials in the villages.

The entire concept of a PVC pump was inappropriate for Ethiopia because PVC pipe made there is of poor quality. They have opted for a metal pump. The project in Malawi encountered a problem that it would have been hard to predict from Canada. Hyenas seemed to think the white PVC pipe on the pump looked like bone and chewed on the plastic fittings and spigots.

In Sri Lanka, the PVC pipe has a rough inside surface which wore the polyethylene piston rings and prevented the formation of a really good seal. So the researchers replaced the polyethylene rings with leather cup seals which can easily be made in the villages. Another hitch developed--the solid PVC stock required to make the pistons and foot valves was not locally available. The team tried to make a "solid" cylinder by gluing progressively smaller PVC pipes inside one another but the ends tended to break off when the grooves were cut for the piston rings. Researchers tried to fabricate the piston and foot valve from wood but the piston rings stuck in the wood when it got wet and expanded and did not seal properly against the walls of the riser pipe. It was finally decided that importing pistons and foot valves from

Malaysia was an inexpensive and efficient solution to the problems of quality control.

This unsophisticated wood and leather design makes local fabrication and repair possible, and has proved its reliability under field conditions. The use of leather instead of polyethylene rings meant that the seals wore out sooner but it also meant that villagers, who could readily obtain and work with leather, were able to replace the seals by themselves. Also, in Sri Lanka leather is less expensive than polyethylene.

In the second phase of the research the Sri Lankans are manufacturing their version of the pump through a network of cottage industries operated at the village level entirely by women. This research project is testing the feasibility of involving primary users --women--in all aspects of handpump development, from manufacture to installation and maintenance.

By promoting handpump manufacture as an income-generating activity, it is hoped that self-sustaining village-level industries can be established. It is also anticipated that, by locating the industries as close as possible to the sites where the pumps will be installed, any problems in pump operation and maintenance can be resolved easily.

In Malaysia, researchers found that despite obvious satisfaction and acceptance of the PVC pumps, the villagers seemed reluctant to purchase them, claiming they were too expensive. Local mass production is now making the handpumps more affordable. Research is currently under way into mass producing them by injection molding of plastics. The Malaysian Government has supported the manufacture of 550 mass-produced models. The pumps will be installed and monitored by the Ministry of

Health and experiments will also be done on their performance on medium and deep wells.

There are now four designs that have developed from the original Waterloo pump and there may soon be more because this second phase evaluates the pumps, not only in terms of the production process but also in light of the "software" aspects of their use. How will the pumps be brought to hundreds of thousands of villagers, who will pay for them, and who will maintain them? Patterns of village life will change with the introduction of the pumps and the pumps will be modified for specific conditions of local use.

A handbook illustrating the installation, maintenance, and repair of the pump has been produced for use in the Philippines and Malaysia. A similar manual will be produced and distributed with the pumps in Indonesian and Thai villages.

The third phase of IDRC involvement with the pump will explore its commercial production. All too often, development agencies consider their role to be the design and testing of a technology that may never be produced. Rather than assume that a proven innovation will attract commercial producers, IDRC is planning to take the pump to the entrepreneurs. It will support marketing studies, consult with lawyers about licencing and patents, and work with governments and businessmen to establish controls over quality, pricing, and installation of the pumps.

IDRC program staff are excited about the pump's potential for supplying clean water to rural people in developing countries. They are also pleased with the way the technology has been developed as a cooperative effort between researchers and users. They think that field

testing and modification, incorporating the views of the users, is essential for the effective transfer of technology to the village level. If this strategy proves successful, it could be a.useful model for the dissemination of other technological innovations.

It must be remembered that transferring a technology is not a simple case of financial resources, trained experts, and a good design. It also involves complex social, cultural, political, and economic considerations that are best--perhaps only--understood by the people themselves. Technology cannot be “parachuted” in. It must be examined, tested, and modified according to local needs and available expertise and materials.

5.3a Capturing the reader's interest

Please read the attached articles in preparation for our next morning meeting. We will be talking ahout ways to capture the reader's interest with the opening paragraphs of an article. Pay special attention to the beginnings of these articles. Do some of them capture attention better than others? What lessons can be learned from them?

5.3b Capturing the readers interest

In the attached article, look for material for a more dramatic opening, one that will be more likely to capture the reader's attention. Write the first 200 words of a revised article.

AQUACULTURE

HIGH-YIELD VILLAGE PONDS

ANDREW WILLIAMS

Milkfish raised by fish farmers is sold at market, in Iloilo, Philippines.

The practice of raising fish in enclosures as an alternative to capturing them from boats is an ancient one. Pond culture of carp began over 3000 years ago in China and fish farming, or aquaculture, spread from there throughout Asia. The historian Pliny tells us that eels, carp and mullet were stocked in ponds in Republican Rome 2000 years ago

Aquaculture on a large scale died out in Europe, however, and was carried on in Asia primarily as a sideline by farmers until this century. When Magellan visited the Philippines in the 16th century, he "rediscovered" aquaculture, observing the locals raising milkfish (chanos chanos) in brackish water ponds along the coast

MORE RELIABLE THAN FISHING

Fish farming offers people the same advantages over fish capture that animal husbandry offered over hunting many years ago. Aquaculture provides a more reliable source of food than fishing does. It can be less expensive, available year-round and less dangerous — as anyone can attest who has seen the small fishing boats of Asia braving the open seas. Despite these advantages fish husbandry has been largely ignored by scientific research until recently and fish farmers were artisans, not technicians.

In this century, the rapid growth in the world's population has resulted in a huge increase in the need for food protein Fish is an obvious source to help fill this need, especially in Asia where fish is a major part of the diet. The region has experienced the largest increase in population and also has large expanses of water which could be developed for aquaculture.

Initially, efforts to increase fish production concentrated on marine capture fisheries. and, as was the case with most land-based agriculture, the expansion of fishing areas and improved technology resulted in rapid increases in production during the 1960s and early 1970s. However, it also resulted in a more sophisticated, energy-consuming technology.

Most countries with a fisheries resource to exploit are now developing, or have developed, a deep-water fleet with all the attendant infrastructure of harbours, landing, repair, and processing facilities. Training programs in fisheries gear technology, navigation, and engine operation and repair all have to be established. These are all high capital-cost investments, and with the adoption of the 200-mile economic coastal zone, they should pay dividends.

But the world's oceans are not the inexhaustible resource they were once thought to be. Some experts believe that the maximum sustained yield of the oceans — the point beyond which total fish stocks actually start declining — is now being approached. It is already evident that catch fisheries are subject to the law of diminishing returns. FAO studies have shown that the cost-per-tonne of catching the last two percent of a school of fish is about 10 times that of the first 98 percent The energy cost of fishing for the last few percent is equally high, and in the future, marine capture fisheries will likely become even more expensive and energy-consuming As a source of cheap food for the people of the poor nations, the prospects are not good.

By contrast, the potential for increasing fish production through aquaculture is considerable, and much of the technology is relatively simple and inexpensive There are also vast underutilized areas of water throughout the Third World that are suitable for aquaculture in one form or another. India alone, for example, has an estimated four million hectares of village ponds, but less than one-eighth of this area is used for aquaculture.

But if the full potential of aquaculture production is to be realized, there is an urgent need for a great deal more research. Until very recently, the only systematic research devoted to aquaculture has been of the capital-intenswe variety, aiming for the lucrative luxury markets of the industrialized nations with products such as fresh and frozen trout. This might be useful in bringing in foreign exchange, but it does little to benefit the rural poor.

BREEDING IN CAPTIVITY

Despite the fact that techniques for the artificial breeding of fish through the use of hormone injections were developed over 40 years ago, there still remain many important species that cannot be bred in captivity. It was only in 1977, for example, in an IDRC-supported project in the Philippines, that the milkfish was first bred in captivity. To appreciate the significance of this event, it is necessary to know a little about the milkfish, or "bangus" as it is commonly known in the marketplace.

In the Philippines, Indonesia, and Taiwan, which are the main producers, milkfish is a major source of food protein. With the annual "harvest" running at around 250 000 tonnes, milkfish farming is also of considerable economic importance, especially in rural areas. In the Philippines, for example, it is estimated that some 170 000 families earn at least part of their livelihood from farming milkfish. Until recently, however, it had proved impossible to breed milkfish in captivity. Thus all the fry — the young seed fish required to grow marketable fish — had to be caught in coastal shallows using hand nets. This method is inefficient, as a large number of the tiny fish die during transportation, and is no longer able to meet the growing demands of the industry.

BASIC QUESTIONS

Thus, when the Southeast Asian Fisheries Development Centre (SEAFDEC) launched a project to develop a technology to improve the production of milkfish, mass-

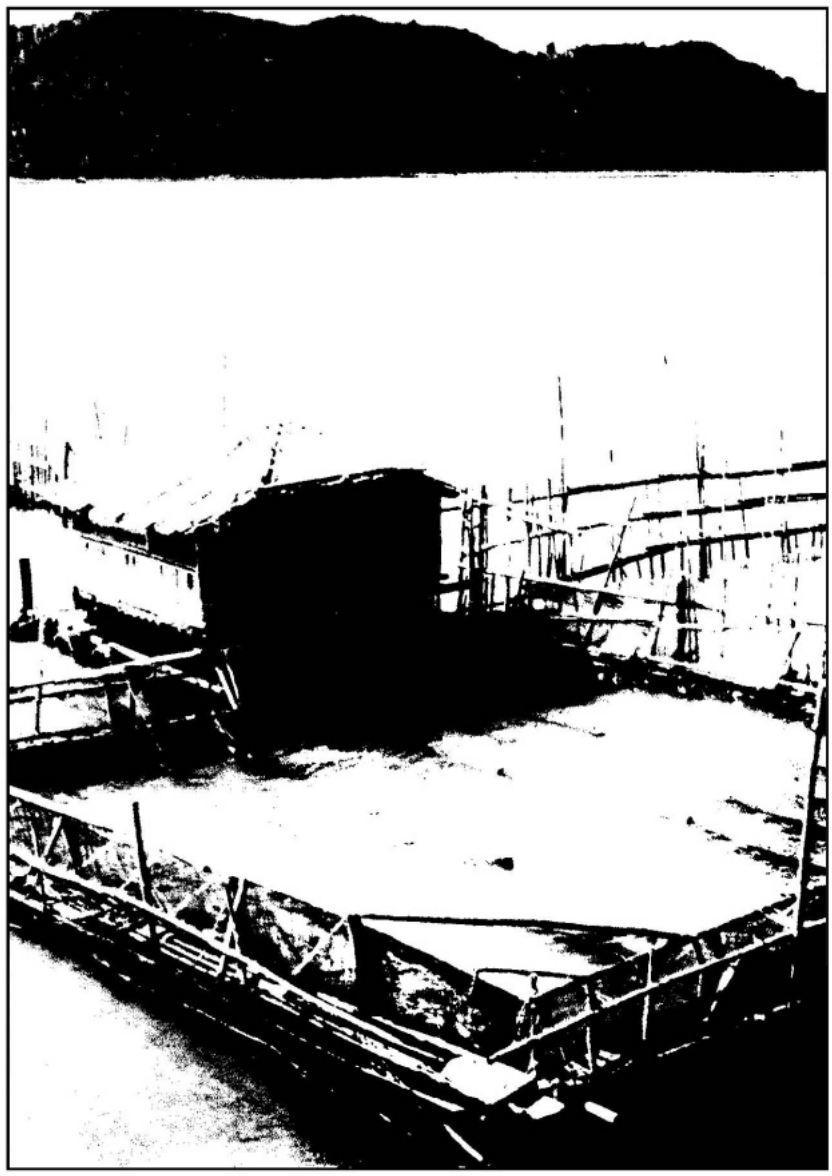


Photo by Claude Dupuis

Cage culture reduces the uncertainty of supply that afflicts capture fisheries.

scale seed production was planned. But first, a number of basic questions needed to be answered: How and where do you catch a milkfish breeder alive? Having done so, how do you keep it alive?

SEAFDEC'S seed production team began by capturing wild spawners, but mortality was high. Milkfish are so excitable that capture and handling causes stress that often kills them. A gentle technique for handling and transporting wild spawners had to be developed. The fish were lured into baited cages which were towed to shore. They were then transferred to individual plastic bags and carried on a hammock. When these fish were carefully released into tanks with controlled salinity, a good survival rate was achieved.

The first experiments in 1976, to induce milkfish to spawn, met with partial success. Females injected with purified salmon hormone (gonadotropin) ovulated, but the eggs could not be fertilized since none of the males responded to hormone treatment in April 1977, however, newspaper headlines throughout the Philippines proclaimed "Bangus is born", "Breakthrough in milkfish culture", and even "Bangus without sex" Spawning had indeed been induced by injecting hormones, namely acetone-dried powdered salmon pituitary gland and human chrorionic gonadotropin. The eggs were fertilized with sperm from induced males, incubated, and hatched.

INDUCED FERTILITY

This success, which has since been repeated in other experiments, was made possible through IDRC-funded projects in Canada. The first enabled researchers at the University of British Columbia to demonstrate that the hormone (gonadotropin) released by the pituitary gland to stimulate the gonads is the same in all bony fish. They showed that fertility could be induced in milkfish through injections of gonadotropin extracted from the pituitaries of Pacific salmon. They worked with a commercial fish packer to extract and process the gonadotropin from a million salmon pituitaries, and ship it to various IDRC-supported projects around the world.

More recently, Nancy Sherwood and Brian Harvey at the University of Victoria, and Larry Crim at Memorial University of Newfoundland have followed the hormone chain of command back to the brain. A hormone produced in the brain (leuteinizing hormone-releasing hormone or LHRH) stimulates the pituitary gland to produce gonadotropin which, in turn, stimulates the gonads. Since LHRH is also the same in all species, they began to take the brains, instead of the pituitaries, from Pacific salmon catches.

The latest development will make milkfish breeding independent of B.C. salmon. An analogue (LRH-A) of the hormone produced by the brain (LHRH) is being chemically synthesized. The hormone analogue is longer lasting than the natural LHRH and can be implanted in a time-release capsule or an osmotic pump to minimize handling of the sensitive milkfish.

The same chemicals are being used in IDRC-aided projects in Malaysia, and in China where the Chinese carp are being artificially bred in captivity (see companion article, page 29)

"There are vast underutilized areas of water throughout the Third World that are suitable for aquaculture. "

The common carp was the most popular species for aquaculture in China for many centuries, until, it is said there came an emperor of the Tang Dynasty whose family name was Lee. Since the Chinese word for common carp sounds exactly the same, the mere idea of eating "lee" became unthinkable — so the fish farmers had to turn to other species to fill their ponds They did not have to look far to find four other carps the grass, silver, bighead, and mud carps, all of which happen to have quite different feeding habits, and can therefore coexist productively in the same pond. And so the Chinese developed a highly successful fish polyculture system, quite by chance, more than a thousand years ago.

It was only quite recently, however, that the scientific basis of this system was recognized, and in India researchers at the Central Inland Fisheries Research Institute (CIFRI) were quick to adapt the System to India's needs. Using both local and exotic carp species, they developed a polyculture "package" that could produce annual yields of up to 9000 kilos per hectare of pond surface.

POTENTIAL OF POLYCULTURE

Indian fish farmers traditionally cultivate only one species in each pond, and take an annual catch of about half a tonne from a one hectare pond. CIFRI researchers were able to produce more than ten times that amount from the same size of pond by cultivating five or six fish species with different feeding habits under controlled conditions at the Institute's headquarters in Barrackpore.

With the support of an IDRC grant, the Institute sent a team of researchers to relatively remote villages of Orissa, West and North Bengal to put their finding to the test. They wanted to see if the results obtained with composite fish culture (polyculture) under experimental conditions could be duplicated by local people using village ponds

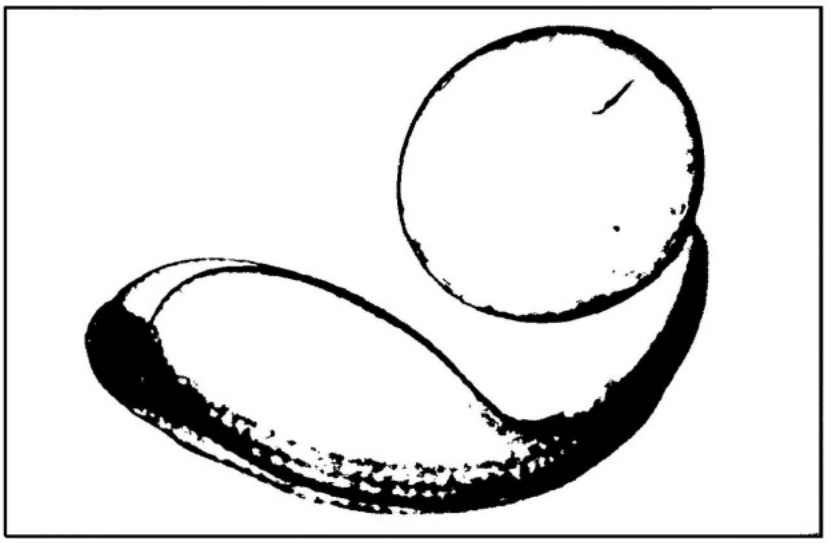
Biraharekrishnapur Village, close to Puri, Orissa, has three ponds that were originally used for drinking water, personal washing and laundry, in addition to some fish farming. Sri B. Mrisa, the President of the Village Council, says before polyculture was introduced, the value of the fish harvested was about 1000 Rupees ($125) per year. During 1979, the first year of the polyculture system, the value of the fish harvested from the three ponds was over 22 000 Rupees!

Before stocking, the ponds were cleared of unwanted fish by an interesting locally developed process. They were treated with an oil cake (the residue of an oil seed from which the oil has been extracted) known locally as Mahua. This oil cake contains Mowrin, an alkaloid which is highly toxic to most fish, molluscs and other unwanted pond life. The particular advantage of the process is that the effective toxin undergoes biological degradation within about 10 days.

The ponds were then stocked wtth the three main Indian carp — Cattla, Rohu and Mirgal — and the exotic Silver, Grass and Common Carp. Cattla and Silver Carp are surface feeders, Rohu is a column feeder, and the Common Carp and Mirgal are bottom feeders. The ponds were fertilized once a month with cowdung, urea and super-phosphate

In the Puri area, a farmer allowed his pond to to be used to demonstrate polyculture for one year. During that year his cash return from the farm was more than four times what he had realized from the traditional system and he was so impressed with the polyculture system that he is using the entire proceeds of his first year to lease three more ponds and to dig a fourth pond for polyculture.

For all its potential, however, it would be a mistake to assume that aquaculture, no matter how highly developed, can ever solve all the world's food problems. At best, aquaculture production is unlikely to amount to more than a small percentage of the world's total fish production But it is a very significant percentage. Fish grow fastest in the warm waters of the tropics, and it is here that the need for more food, especially high-quality-protein foods, is greatest.



New life: Milfish larva hatches.

RESERVOIRS FOR HYDRO AND FISH

Artificially created lakes and waterways present another opportunity for substantial increases in fish production. These man-made bodies of water are rapidly being built and expanded to provide hydroelectric power, irrigation and domestic water supplies. If the appropriate techniques could be developed and applied, these artificial waterways could provide fish as well as power and water. In Turkey, IDRC is working with the local government agency to maximize the fisheries potential of the 25-km-long Keban resevoir on the Euphrates River

The IDRC-assisted project began to study the environment of the reservoir in 1976. Since then it has studied the relationships between different fish species, tested different methods of fish culture such as floating cages, developed a fish disease diagnostic service, and provided training for local staff Since many fingerlings died during transport from a distant hatchery, IDRC decided in 1983 to help build a hatchery at the site. The project has encouraged the growth of 14 fishing cooperatives around Lake Keban and the lessons learned here will be applied to two even larger reservoirs now being built downstream.

A similar project was begun in Egypt in 1977. Researchers raised fish in cages in the brackish water of Lake Quarun and in fresh water irrigation canals. Various recipes for pellets to feed the fish were tried using agroindustrial wastes and seem to be cheaper than, and as effective as, fish meal made of imported grain and beans. The second phase of this project began in 1984 and is applying the results of the initial experiments to the High Dam Lake behind the Aswan Dam of the Nile River. The techniques developed here and in other related projects may have wide applicability in many areas of the world. As the demand for hydroelectricity grows, the number of reservoirs grows with it, presenting many areas wlth a new potential industry and protein source.

ECOLOGICALLY SOUND

Aquaculture, properly managed, is an ecologically sound, technologically appropriate means of food production that can provide badly needed additional income to peoples as diverse as Caribbean islanders and Sudanese nomads. But much research remains to be done to bring economical aquaculture within reach of the rural poor in developing countries.

To better understand the magnitude of the opportunity consider that there are only about 10 farm animals of major economic importance. Yet there are literally thousands of different fish that could possibly be cultured, but about which very little is yet known. Finding out how the best of these thousands of species can be effectively farmed is a challenge of the future for aquaculture researchers as yesterday's art becomes tomorrow's science.

Andrew Williams, who has written previously for IDRC, is now fund-raising coordinator for the Canadian Organization for Development through Education

5.5 Planning newsletters

For next morning, please read this short story. Pretend you are the consultant. Be prepared to discuss what the people in it did right and what they did wrong.

(Attach to this exercise the first two pages of unit 5.5, down to the question: “What do you think the consultant said?”)

5.6 Planning newsletters

1. Analyze the two attached newsletters.

2. Decide what readerships each newsletter appears to be intended for.

3. Decide what impression each newsletter gives you of the sponsoring institution.

4. Examine the design and layout, illustrations, and use of color in each newsletter.

5. Read some of the articles, noting titles and headings.

6. Study how the material is organized in each newsletter.

Be prepared to talk about the newsletters in terms of audiences, general impression, design, photograph, illustrations, and editorial quality. What do you like and dislike about each of them?

5.8 Interviewing for information

Interview one other member of the course, to be chosen by lot. Then write about that person in 150 words (900 characters). Include at least one thing about the person that no one else in the group knows yet.

This interview will be used in a newsletter. Make it interesting.

5.12 Writing press releases

Write a short press release about this course and the fact that you are attending it. Plan to send it to a newspaper or other publication in your home area. Be sure to make your own participation in the course a prominent part of the story so that the editor will be attracted by the local interest.

6.5 Choosing photographs

Here are nine photographs taken at a Family Day which was part of IRRI's 25th anniversary celebrations. They show

- a new Training Center building, opened during the anniversary
- the opening ceremonies of Family Day, with the director general speaking
- an obstacle race
- a sack race
- a race with teams transplanting rice seedlings
- a race to see which teams could thresh rice fastest
- a relay race in a muddy, flooded rice field
- dancing by an Indian scholar at a Family Day party
- the director general presenting an award to the one employee who had served all 25 years.

You are the editor of a newsletter published at IRRI. You are expected to publish a photographic story about the celebrations.

1. Choose the five photographs you would use.

2. Crop them to make them more effective.

3. Choose two of them to be printed larger than the others.

6.6 Using photographs for effect

Here are contact prints of photos taken at an event in a local village.

You have been asked to put together a photo story about the event for your newsletter. Choose four to eight photos for publication.

Indicate how you would crop them, once you had the enlarged prints.

What instructions would you have given the photographer before the assignment?

9.1 Estimating the length of a manuscript

Count the characters in the attached paper and estimate the amount of space it would fill in a publication with the following specifications.

This publication is typeset in columns 14 picas wide, three columns to a page, with 56 lines of straight text in each column. Major text is set in 10/12 pt Times Roman. Tables, references, and other set-down matter are in 8/9 pt Times Roman. Allow 37.5 characters to the column line in major text, and 46.9 characters to the line in set-down matter. (Be sure to confirm these figures from table 1 in unit 9.1 .)

Plan that Figure 1 will be 2 columns wide, and Figure 2 will be 1 column wide. Make the tables as wide as necessary—l, 2, or 3 columns.

7
Notes on the exercises

Exercise 1.2

With the instructions, I gave trainees pages photocopied from several kinds of publications. Trainers should try to find their own examples from local sources. The extracts might include

- the title page of an article in a scientific journal
- a page from a report to a government ministry
- a page with illustration from a popular encyclopedia
- a chapter opening from a first-year university textbook
- a page from a research institute's newsletter
- a one-page article from a semi-popular professional magazine
- a page from a comic book or other highly illustrated extension publication
- a page from an institute's annual report
- a page from a popular magazine
- a page from a children's book
- a page of quantitative material from a reference work
- a page from a lab manual or a cookbook

The exercise is most effective if all the extracts deal with one general subject, such as agriculture or public health, but do so at different levels. Trainees should be able to identify readerships from various clues: page format, type size, extent of illustration, organization of the text, level of language, particular words or phrasings (the government report will be full of recommendations, for example), etc.

Discussion of this exercise should draw from the class most of the points that are considered in units 1.3 and 1.4.

Exercise 1.4

This exercise was designed for practice in the questions set out in units 1.3 and 1.4. At IRRI, it also provided an excellent opportunity for trainees to meet the staff editors and production manager, and to learn something about the IRRI publishing operation. This is desirable in any course held at an institute that has its own publishing program. Local staff then become part of the course. The analysis demonstrates that any publisher's output can be analyzed and possibly improved.

Accompanying the instructions were copies of

- a thoroughly illustrated publication written for extension workers and farmers
- the weekly calendar of events
- the quarterly newsletter
- a research report in a series format
- the latest annual report
- a recent book-length publication

Exercise 1.5

Once again, trainers should find local examples. Those used at IRRI were 100 to 250 words long and taken from

- advice on how to cook vegetables. from a magazine for teachers of domestic science
- an account of a medical discovery written for a highly successful popular magazine
- an article about editing, from a professional journal
- instructions on ways of measuring sugar concentrations in nectar, from a textbook

Many other examples can be found, so long as the style of writing and level of vocabulary are notably different. This exercise worked well even when trainees had relatively little English.

Exercise 1.7

Unit 1.7 was originally prepared as an exercise, and as shown here can still be used in that manner. With the instructions; trainers may wish to give out the set of guidelines in unit 1.7 headed "Asking questions." Alternatively, the guidelines can be held back; then almost certainly these points will arise during discussion of the questions the trainees submit.

The questions need not be distributed as they appear in the unit. I used to discuss the trainees' suggestions in the group and from them create a new list for distribution. That is, in fact, the way the final list developed.

Exercise 2.1

In my view, the correct order for Question A is 5,4, 1, 3,6, 2, but opinions may differ. That will simply add to the discussion.

Question B is a particularly useful exercise. I had the trainees read their short descriptions aloud; then we discussed them; then we repeated the process with the longer descriptions. The short descriptions never give a concrete image, of course. (One of the most memorable was "I love my IRRI room.") In the longer descriptions, watch for those that mention color, that place the room in a setting (where it is in the building, what can be seen out the window, etc.), or that give a particularly clear picture of the room, as compared to those that simply list items or are largely subjective.

Exercise 2.2

In Question A, No. 6 is impossible to prove unless one has watched Mr. Lee constantly over his lifetime. It is thus a good lesson in avoiding the word "never." No. 7 compounds that by including the unprovable word "good."

Question B may be revised to include classified advertisements from a local newspaper.

Exercise 2.3

Question A. There may be more than one correct response to some of these words.

Question B. Watch especially for improvement from the last exercise.

Question C. Suggested revisions. Other solutions may be as good or better.

1. These ideas have many origins. (If there are many origins, they must be different from one another. "Very" should be omitted when possible.)

2. The herd gave enough milk.

3. Tractors make plowing easier.

4. Chemicals can control the weeds.

5. I think the department should adopt a new policy.

6. With regular operating reports, managers and staff can make changes in good time and thus increase productivity. (The original sentence is open to several interpretations. Note that "optimize" is often used to mean "increase" and that "productivity" is not the same as "production.")

7. Modern machines have made farming easier. (The first five words can be omitted: the reference to machines implies that they are in use, and they could not be used unless they had arrived. "Machines" is more concrete than "machinery.")

8. The editor's main job is to make authors' manuscripts easier to understand.

Exercise 2.4

Suggested revisions. Other solutions may be as good or better.

Question A

1. This evidence proves my theory.

2. We (They) reviewed the relevant regulations.

3. Farmers now weed by hand.

4. The database stores information.

5. The director general himself wrote the annual report.

6. Productivity increased 25 percent (Table 4). (Within the context of the lesson, it would be acceptable to say: "Table 4 shows a 25 percent growth in productivity." However. many publications prefer the first version, which emphasizes the results.)

7. These results suggest that natural enemies can control pests effectively. (The wording "could be concluded" implies that the results are not actually conclusive. An editor should not make the statement more definite than the original: thus "suggests.")

8. This study takes a fourth approach toward a solution.

9. Rats caused some damage late in the second experiment.

10. The hatchery needs continuous fresh water.

11. Ministry extension specialists will hold a field day on October 15.

Question B

1. The success of chemicals in controlling weeds in upland rice depends on the amount of moisture in the soil. *or* Chemicals can control weeds in upland rice only if there is enough moisture in the soil. (The second solution is better because it gives more definite information; but an editor would have to know the subject or check the accuracy of the statement before making such a change.)

2. The head of the information department decides what photographs will be taken.

3. This article describes how people understand what they read.

4. The report does not include data from tropical Africa, where an average of 5.5 million cases have been reported in recent years. *or* The data do not include an average of 5.5 million cases reported in recent years from tropical Africa. (In either case, trainees should recognize that they need to ask the author whether this means 5.5 million cases annually or cumulatively over several recent years.)

5. Normally, not all mosquitoes are killed in an effective spraying program. *or for greater emphasis* Normally, even an effective spraying does not kill all mosquitoes.

6. Extension field workers must be able to provide accurate information if educational programs in agriculture are to succeed. *or* Education in agriculture will succeed only if extension field workers have accurate information to give the farmers.

7. In preliminary trials of machines for strip tillage, a specially designed tine, pulled by a 4 kw (6 hp) tractor, broke up the soil satisfactorily to a depth of 30 cm.

8. They (We) examined how present policies and procedures for standardizing equipment and materials have been carried out in three regions during the two years.

Exercise 2.5

Suggested revisions. Other solutions may be as good or better.

Question A

1. The number of drugs is increasing rapidly worldwide. More than 10,000 drugs are now available with a doctor's prescription, and ten times that many without any prescription. This has not been always been a help. It has created major problems for developing countries that cannot regulate the quality, sale, and distribution of drugs within their borders.

2. A small-scale field trial was carried out with the larvicide temephos (Abate) against Mansonia mosquitoes in a pool covered with a rich aquatic flora, mainly *Hanguana malayanum* var. *aquatica.* The first problem was to decide on the most appropriate formulation to apply. (The original is a remarkably literary beginning for an article written for a scientific journal.)

3. We are assessing the impact of new technology on rice production, farm income, income distribution, employment, and social welfare. With this information we can design biochemical and mechanical technology that will best meet the needs of rice farmers.

4. The fungus can be controlled by using disease-free seeds and by treating seeds with hot water. However, spraying fungicides is probably a quicker way to solve the problem.

5. The brooding period begins when the chicks are taken from the incubator and lasts two to six weeks. During that period, the chicks get outside heat to help maintain their body temperature. (Although house style has not yet been discussed, trainees should correct the inconsistency between "two" and "6.")

6. You should see each employee's card when he or she is certified. To make sure you have done so, initial each card on the same line as the supervisor. (The revision recognizes that some employees may be women.)

7. Mr. William Smith will hold two clinics on writing. The executive committee hopes that, as a result, the institute's materials can be simplified and made easier to read. To provide Mr. Smith with examples to analyze, please send me by Monday typical samples of all written material prepared by your department. (Signed): Director General. (This solution does more than simplify a complex sentence. It provides an example of direct address and gives the request maximum authority.

Question B

1. The three species of weed developed at different rates. ("Grew" may be correct in place of "developed" in a particular context, but the words are not synonymous.)

2. Weeds can be controlled by keeping the rice fields flooded.

3. Crop yields increased up to 10 percent (Figure 4).

4. Laboratory staff must prepare the specimen sections thoroughly.

5. Because of this discrepancy, the researcher must check the data. *or* The researcher must check the data to find the source of this discrepancy. (The demand comes from a supervisor, not the discrepancy.)

6. We believe administrators should consult the staff before changing office regulations.

7. Khan (1984) set out the reasons why unemployed workers leave areas that lack sufficient capital. (If Khan's paper was not significant, presumably it would not be cited.)

8. Don't hesitate to say no. *or* Say no quickly.

9. He was often late for work.

Question C

1. During that time, the stomach area became pink and tender. (Trainees may suggest omitting "area" and that may be acceptable. But strictly speaking, the stomach area is different from the stomach, which is an organ inside the body. The color of the stomach itself cannot normally be seen.)

2. The holes must be aligned accurately. (Purists may argue that the last word is unnecessary, because if the holes are not aligned accurately they are not really in line.)

3. The book weighed 2 kg.

4. We studied many varieties of wheat. (Varieties are, by definition, different from one another.)

Exercise 2.6

Trainers should find a sample text from a local source. Unedited manuscripts (like this one) are a good source. The original text should be at least 200 words long, to ensure that there will be 100 words in the revised version for testing. The text should not be too obviously difficult to read: part of the lesson is the ease of improving even material that seems quite readable. The text in the exercise scores on the Flesch test as "difficult." Remember that the Flesch test is valid only for English.

Exercise 3.1

The "manuscript" in this exercise is only an example. Trainers must find their own material, suitable for the trainees they are working with. Anyone working with manuscripts should have little trouble finding something suitable.

The sample manuscript should be fairly short, no more than a couple of pages long. It can be on any topic. It should be inappropriate for the intended readership. In this case, the language is too technical for a farmer: words like "lesion" and "exserted" must be translated into everyday language. Further questions might be asked, and suggestions made—for example, that the author include ways to control the diseases identified in the manuscript.

Question 3, drafting a letter, should be included only if Unit 3.9 has already been discussed.

Exercise 3.2

Trainees can be as creative as they wish in this exercise—a good opportunity for them to let go.

The exercise can be divided in two. The first two questions can be assigned to be discussed the next morning. Then an evening or two can be allowed for trainees to absorb that discussion and edit the manuscript. In the 10-week schedule, for example, the exercise would be assigned on Tuesday, the first questions would be discussed on Wednesday, and the others on Friday. Trainers might ask to have the revisions submitted by 5 pm Thursday so that they can review them that evening and possibly make overhead transparencies of some pages for detailed discussion in class.

What the trainees do will vary. In general they should recognize that

- the opening is weak. It starts with the author instead of being directly addressed to the reader's interest. (What if no one were to ask the author that question?)
- the opening assumes agreement that a problem exists and the reader knows all about it. Is this valid? Should the problem be stated first? Should any such statement be supported by examples or other evidence that the problem does exist?

- part of the fourth paragraph, about poor communication among scientists, is not particularly relevant to the main argument and could profitably be omitted. Later references to that problem should then also be dropped.
- the author spends too much time setting out the problem and too little explaining how to deal with it. The balance should be improved—probably by shortening the first part of the article.
- in most of paragraph 3, scientists are the subjects of the verb. But in the last two sentences, the subjects are the public and the press. Would the paragraph be more effective if the subject were always scientists? Scientists are the intended readers, and scientists are the people who are being asked to change.
- the call for action (paragraph 7) could be improved by making it a true agenda—listing the things to do in a set of points. Each action then would have a separate sentence. The list also would make the agenda look different from the rest of the article, and thus give it added emphasis.
- the call for action could be made more concrete. In particular, the last sentence is too general: how many scientists will understand what the author means? Any editor who has reviewed Module 2 should be able to suggest revision.
- the important argument in the last paragraph (the contribution of science to public good) has not been suggested previously. In fact, the only examples the author provides are not of benefits but of problems caused by science, in paragraph 2. The author needs to suggest earlier that the negative view of science is one-sided. The editor should ask for examples to be added to the final paragraph to support that argument.
- the true conclusion—the last sentence, which echoes the first-does not follow from the sentence before it. More needs to be said about writing simply. At the very least, the sentence could be revised slightly to follow more closely from the theme of the manuscript as it now stands. Instead of one command it could become two equally important commands: "Explain yourselves, and do it simply!"
- the writing is an example of what it complains about. The manuscript needs to be simplified and shortened; unnecessary words should be cut.
- something should be done about the dreadful mixed metaphor (storms and drought) in paragraph 6.

(The exercise, incidentally, is similar to an article that was actually published. It has been modified only to free the exercise from copyright restrictions.)

Units 3.3–3.9

No exercises have been suggested for these units. If the trainees are working on projects, there should be plenty of material there to edit for detail, without any need for exercises. The projects will also provide ample opportunity for practice in typographic markup and proofreading. If the course does not involve projects, trainers should easily be able to find examples for exercises from manuscripts in their own offices.

If desired, there might be one class exercise in proofreading apart from the project, so that everyone can practice skills together. A sample proof for checking is easy to prepare.

Exercise 4.4

This is an optional exercise. If trainees' projects contain references, it should be unnecessary to have such an exercise.

Exercise 4.5

This exercise is recommended because it shows just how much can be done in editing a table. If the table is not used as an exercise, both it and the suggested revision can be used as examples in class.

The data are hypothetical but the table is based on one that was actually published. Only one minor error has been added: the original table was numbered.

Editing may include the following:

- The table needs a number.
- The title should be shortened to remove information in the column heads.
- Sideheads can be revised to eliminate repetition.
- The average number of pages is irrelevant to the subject of the table: that column can be eliminated.
- The word "circulation" should be added to the major column headings for "average" and "median" since not all the columns are about circulation.
- It should be unnecessary to report both absolute numbers and percentages in all distributions. Assuming that the proportion is more important than the absolute numbers, it should be enough to provide totals and percentages.
- The percentages do not need to be accurate to the first decimal place. They can be rounded to the nearest full number.
- There are two errors in calculations of percentage, under "average circulation, North America, all strata" and "median circulation. North America, below 1000." (Some trainees may point to an apparent error in the averages: the individual averages do not add up to the totals shown [4050]. There is no error: it can be shown that the average for the total was taken from total figures and not by adding averages of classifications.)
- Questions of style can be addressed. The table might look neater with fewer capital letters in the headings and without commas in the numbers.

These changes will produce Table 1.

Table 1. North American and other circulation for 120 journals, 1987

	No. of journals	Average circulation			Median circulation		
		North America (%)	Rest of world (%)	Total	North America (%)	Rest of world (%)	Total
Circulation							
³ 6000	25	73	27	11630	68	32	8390
2500-5999	33	61	39	3810	63	37	3620
1000-2499	39	54	46	1390	57	43	1430
<1000	23	61	39	640	56	44	590
Total	120	68	32	4050	67	33	2290
Type of publisher							
professional society	51	74	26	5870	66	34	4900
research institute	21	43	57	2690	45	55	2440
commercial publisher	48	65	35	2710	73	27	2030
Total	120	68	32	4050	67	33	2290

Source: EDPUB Associates, Inc.

Exercise 5.1

This exercise is intended to be assigned the day before unit 5.2 is discussed.

It should include four or more articles chosen from local or appropriate publications aimed at non-specialists. At least one of them should fail in addressing non-specialists: it might use technical language without defining terms, or be unduly abstract, or lack prominent references to people. The others should make use of one or more of the techniques discussed in unit 5.2.

After unit 5.2 has been discussed, the group may consider ways to revise the unsuccessful article and perhaps jointly draft a new version. Or the trainer may have prepared a revision in advance to show how this can be done.

Examples are not included for this exercise. They will be most effective if they are recent and relate closely to the trainees' interests and experience.

Exercise 5.2

This is a lot of work for one evening, but it gets people applying what they have learned, and it is creative. To lighten the load, it can be assigned to teams of three or four people. They can discuss strategy together and jointly decide on the approach and revision. (In the sample 10-week schedule, the exercise can be handed out on Thursday and need not be discussed until Monday morning.)

In general, the revision should use simpler language, most obviously "drinking water" rather than "potable water." Nouns should be made into verbs, and unnecessary words pruned. The opening should be about people: how they have traditionally obtained water for drinking and washing, and how they can be freed by the new handpumps.

There should be a bonus for anyone who decides to catch reader interest by reporting early in the article its most bizarre detail—the trouble in Malawi with hyenas who thought the white pipes were bones.

If possible, the trainees' revisions should be gathered before the class begins and duplicated, either on overhead transparencies or in photocopies for everyone. That way trainer and trainees can discuss in detail what each group has done.

The manuscript, in its present form, was published in *IDRC Reports* 14:3 & 4, October 1985. That publication is intended for a more educated readership than the target group identified in this exercise.

On the next page is one possible revision of the opening, based in large part on suggestions from trainees at IRRI.

Revised manuscript Exercise 5.2

Ramee in India, Yusof in Malaysia, Karim in Bangladesh, and Umosen in Nigeria are villagers. They have to work hard to scrape a living from the soil, and just as hard to get their drinking water. They or others in their family walk long distances every day to carry the precious liquid home in pots from the nearest water hole, pond, creek, or river. Sometimes the whole family must move when a natural source of water dries up. Too often, the water they get is dirty and carries disease.

Constant, safe drinking water is still a distant dream for three out of four inhabitants of the Third World. In crowded city slums and in desert areas like the Sahel, there are no simple answers to this problem. The cost of supplying water to the cities drives many countries further into already crippling debt, but all that effort helps only a fortunate few.

Yet in the countryside, fresh, clean water lies beneath almost everyone´s feet. It just has to be brought to the surface.

In theory, the solution is simple. In the village, drill a well. Seal it so no pollution can creep in. The soil acts as a natural filter; thus water in the well should be good. Then pump the water up. And here the difficulties begin.

Traditional hand pumps are expensive to buy and to maintain. They are made of cast iron and steel and come from factories. They do not stand up to frequent, heavy use in villages. When they wear out, replacement parts must often be imported. Yet the developing world needs more than 20 million of them.

If only there were a hand pump that could be made locally, installed cheaply, and maintained easily! Then Ramee, Yusof, Karim, and Umosen

and all their families and neighbors would be free of bondage to the water pot. This is a goal an imaginative Canadian agency has set for itself.

For 10 years, the International Development Research Centre has been sponsoring the development of a simple handpump made from plastics that are easily available throughout the world. It has carried out tests with local organizations in six countries of Asia and Africa. The results are promising. Before too long, women in the villages of Sri Lanka may be making pumps by hand for their own communities; elsewhere, a different model may be mass-produced by local factories.

Occasionally, as in any development project, setbacks occur. One of the most unexpected came in Malawi. There, engineers found parts of the system gnawed by hyenas. The animals thougint the white plastic water pipes were bones.

Exercise 5.3a

Trainers should find half a dozen examples of articles to photocopy and distribute with this exercise. Most of them should have effective openings of various kinds. One or two should have less effective openings, which are less likely to capture attention.

The exercise should be given out a day before unit 5.3 is discussed.

Exercise 5.3b

The suggested article "Aquaculture: High-Yield Village Ponds," was published in *IDRC Reports* 14:3 & 4, October 1985.

This exercise can also be done in teams. More than one evening may be needed. In the sample 10-week schedule, it can be assigned on Monday and discussed on Thursday.

There is no shortage of material for a more dramatic opening. For example:

- The last paragraph has an imaginative comparison between the number of farm animals and the number of potentially useful fish-a statistic few people would have considered. It calls immediate attention to the importance of fish farming.
- The breakthrough in breeding milkfish could be developed into an opening. It provides a more specific example of the importance of this kind of research.
- The rapid growth in income from fish farming in the Indian village provides a good anecdote to open with.
- Quoting the headline "Bangus without sex" would attract many readers, curious to know what it meant.
- More curious still is the story of maiden milkfish being carried in hammocks to the spawning beds. It could be made into a humorous opening for a serious story.

Instead, the author chose a historical approach that would be more suitable for an encyclopedia than a popular magazine.

The article is also a good example for discussing the organization of material. It is really three stories: a general history of aquaculture; the success with milkfish; the success with carp. Each section takes about the same amount of space, but the organization is unclear. It might have helped if the author had provided guideposts by saying, in effect, "Aquaculture is important, and here are two long examples to prove it." He or the editor might also have made better use of subheadings.

They might also have reconsidered the order in which the examples are presented. Many readers might find the paragraphs about induced fertility difficult to understand, and stop reading entirely at that point. The story about raising carp in India is easier to understand. It may be less significant an achievement, but it still might have come first.

Exercise 5.5

Unit 5.5 was originally written as an exercise, to be used in this fashion. It provides considerable material for discussion, which could cover most of the points made in the balance of unit 5.5 and in unit 5.6

Exercise 5.6

This exercise could be given out at any time during the discussion of newsletters, since its questions cover material in units 5.4, 5.6, 5.7, and 7.11, as well as units 6.5 and 6.6.

The sample newsletters should be local or related to the trainees' interests. They should be from different institutions with different editorial approaches. If they are eight to twelve pages long, there should be ample material for good discussion. (Four pages do not always supply enough examples.)

Everyone should have a copy of the same issue of each newsletter. If there are not enough original copies, use photocopies. In that case, have at least one original copy available so trainees can study the use of color and photographs.

The exercise can be done individually or in teams.

Exercise 5.8

This exercise is most useful if the interview is actually going to be used in a newsletter.

I have the trainees draw slips from a hat to find out who they are going to interview. If one of them draws his or her own name, it goes back in the hat.

The paragraphs the trainees write after the interviews are photocopied and discussed in class.

Then may come a further exercise, this time in editing. We decide that the reports are too long for the newsletter, and must be shortened to 100 words or fewer. Each trainee again draws a name from a hat to select the story he or she will edit. The person who edits cannot be the subject of the interview or its author. The editor can, if it seems desirable, go back to the subject of the interview to get more information.

This thus becomes an exercise not only in securing information but also in using it effectively and economically. To write about a person interestingly in 100 words is a considerable challenge.

Exercise 5.12

This exercise probably should be used only in courses that devote considerable attention to public relations. The press release that is sent to the media might be accompanied by a photograph of the trainee, at work with two or three other trainees. Other trainees can take the photograph.

At IRRI, there was rarely time for people to write their own press releases. I asked trainees to provide only the names and addresses of publications in their area. Then we took a standard departmental release about the course, and near the beginning inserted a sentence with the name and affiliation of the trainee and sent it to the publications the trainees had suggested. A photograph of a small group at work (including that trainee) went with the release. Trainees took the photograph. A large number of releases sent in this way were published.

This exercise is not only good training. It publicizes the course, the sponsoring organization, and the profession of editing.

Exercise 6.5

For this exercise, trainers should find their own subjects and photographs. The exercise will have to be reworded to fit. IRRI details are provided only as examples to show how the instructions might be written.

IRRI experience with the exercise is discussed in the earlier section, "Learning by doing: exercises."

At IRRI, we gave each trainee the photographs as glossy prints. We also provided each trainee with four pieces of light cardboard or cover-weight paper, roughly 5 × 30 cm (2 × 12 in.), which could be taped or glued together to make two L-shapes for cropping.

Exercise 6.6

This is largely another exercise in choosing photos—this time using contact prints, with which trainees may not be familiar. The same comments apply, including the need to find a local subject for the pictures.

Exercise 9.1

The manuscript to be counted can be as long and complex as desired. At IRRI, as a joint effort in class. we worked through a simple paper — four paragraphs and one short table. Then, as an overnight exercise, I gave them a paper with about 12 pages of text plus 10 tables and 2 diagrams. This strained them. It also gave them practice with something more complicated than most of them would ever have to count again, and success with it gave them confidence for the future.

A shorter and less complicated paper would be just as suitable.

Every trainee must have a copy of the paper. One or more copies of the publication in which the paper is to appear should be available. The physical description of the publication in the exercise is given only as an example and should be revised to match the publication actually used.

8
Project assignments

In courses with major projects, assignments should be given from time to time to relate the work of the course to work on the projects. Trainees also should be expected to work on their projects without such prodding.

Early in the course, trainees should receive a schedule of deadlines for each stage in production. The dates should previously have been decided in consultation with the production staff. A basic schedule should give dates for

- editing to be complete
- typographic markup to be complete
- copy to be submitted for typesetting
- first proofs to be received from the typesetter
- first proofs to be returned for correcting
- dummy to be complete
- final proof to be OK'd
- page assembly to be OK'd
- printed projects to be delivered

Here are some basic project assignments, and when they might be handed out. The order fits the sample 10-week curriculum.

1. (After discussion of unit 1.5)

Describe the readers you intend to reach with your project. Give as much detail as possible.

After defining WHO you want to reach, answer the next four questions in planning for publication:

> WHERE are the intended readers?
>
> WHAT is being said? (Summarize the message in one short paragraph.)
>
> WHY is the material being published?
>
> WHEN is the project going to be used?

Then give a preliminary outline of HOW you think the project should be published.

2. (After discussion of unit 6.6)

Examine the photographs and other illustrations you have brought for your project, using the criteria we have discussed. Decide which photographs you want to use, and how they might be cropped.

Decide whether or not you need more photographs from home. If you do, draft a letter or telex asking for them.

Plan to discuss this with me next week.

3. (After discussion of unit 2.6)

If you have not already done so, start editing the manuscript of your project. Use the rules we have been discussing for making manuscripts more readable.

Take a sample of 100 words and carry out a Flesch readability test. Does the readability score meet the needs of your intended readers?

Plan to submit an edited copy of at least 10% of your manuscript to me during the coming week. We will discuss it.

(Note: At IRRI, we gave each trainee two photocopies of the project manuscript and held the original to refer to. This gave the trainees greater freedom in editing, because they knew that if anything went wrong another copy could be made quickly. Once editing began, it continued without further project assignments until editing was complete.)

4. (After discussion of unit 6.2)

Examine any line art and decide whether it is suitable for reproduction. Plan any further artwork that needs to be done.

Discuss this with me early next week.

5. (After discussion of unit 9.1)

In order to design your project, you will need to know the length of the manuscript.

Please make as accurate an estimate as possible of the number of characters in the text. Also list the number and likely size of the illustrations, the number of tables, and other physical details.

You will need to complete this for the workshops in design next week.

6. (Near the end of the course, when projects are being printed)

Please be prepared to speak for approximately five minutes about your project during a review of the course. You should deal with the following topics:

1. how you planned the publication, taking into account the content, the purpose, and the intended readership. You may want to use the preliminary plan you prepared following unit 1.5.

2. what problems you had to solve in planning the publication.

3. how you solved those problems by editorial or design decisions.

4. what you have learned in planning, editing, designing, and producing your project.

(Note: This serves as a review of the course. See page 30, “At the end.”)

9
Push-ups

Here are some sentences that can be used as morning "push-ups." Nearly all come from actual manuscripts or publications. They appear in no particular order—just as I collected them. There are lots more to be found.

Most of the journals, 81%, don't make a profit and in fact operate at a loss.

When there is no policy or regular process for the maintenance and expansion of a journal's subscription list, the journal is bound to experience a slow decrease in circulation and a corresponding drop in income.

From being the world's largest rice importer in the early 1970s, Indonesia is now self-sufficient in its main stable food, and may soon begin to import rice.

Adequate supply of potable water in the rural areas of the South Pacific is frequently a major problem for villagers.

Evidence was sought with respect to the manner in which efficacy of management as it occurred in the forest was evaluated, and used as feedback control to improve the overall performance of the management process

Although maximization of family labor force participation is commonly observed to be a survival strategy of the poor, this is subject to certain restrictions in the case of female labor.

Salt is one substance that can change the specific gravity of the solution, thus facilitating the floating of undesirable half-filled and light seeds.

The rice ORS is not drinkable due to the thickness of the gruel.

The varieties used have had levels of susceptibility or resistance to Septoria tritici blotch ranging from very susceptible to highly resistant.

Alachlor showed good control of weeds and gave comparable yields to the handweeded check treatment.

DDT treatment of the sacks is important for storability of the seed.

Investigation was carried out on the physical properties of the object. It was found that the object weighed 20 kg (54 lbs). This compared with an object of a similar nature discovered in 1965 which weighed 17.5 pounds.

The opinion is offered by the researcher that only cogon can grow in that field.

About the residual toxicity problem of arsenic in seed or in soil, as a matter of fact, the natural distribution of arsenic is so extensive that all foods from either plants or animals contain it slightly.

This report is the result of a one month on-farm survey carried out between May–June 1985 by a multidisciplinary team with the objective to understand the farmers' methods of production and production constraints so as to adjust future research programs and design and develop appropriate production technologies which are technically within the farmers' abilities, culturally compatible and economically feasible.

The lack of adoption of new production technologies by farmers is because these technologies were technically above the farmers' technical abilities and had no base on the African farm situation because they were developed by foreigners in isolation.

The difference between the control and those plots applied with spot treatments of methomyl and carbofuran was not significant.

Gross participation rates in the pre-revolution period were 19, 8.1 and 3.1 per cent for Primary, Junior and Senior Secondary education respectively. As a result of the effort made in providing educational opportunity to the broad masses, participation rates at present have gone up to 34.0, 20.2 and 9.5 per cent for Primary, Junior and Senior Secondary education respectively.

During the year 1984/85 a general increase in volume of the Council's activities was recorded compared with previous years.

Although the use of pesticides in the Sahel is still low, the potential for a marked increase in usage is rather high due to the recent initiation of several long-term plant protection programs intended to greatly increase food production in the region. Presentation of this seminar afforded technical experts the opportunity to provide West African plant protection and health personnel early guidance in proper pesticide use and regulation in an effort to avoid unnecessary adverse environmental impact that could result from increased use.

Allow me to say without fear of equivocation that this has been the most pragmatic and interactive Workshop I have ever attended.

Where management perspective is restricted either geographically or functionally, potential exists for distortions to enter decision-making because of the incomplete view of natural systems and the impacts of man´s activities on these systems.

Biological control is the study and utilization of parasitoids, predators and pathogens for the regulation of host population densities.

Some of the traditional methods of preparing food are being mechanized without taking into full account the traditional methods of processing in which case the nutritional values of the product may be lower than the traditional product.

The main hindrance with these presses [for extracting palm oil] is that cylinders, pistons and valves are parts whose manufacturing depends on precision machining and which are subject to corrosion in tropical climates where humidity tends to accumulate in the hydraulic fluid through condensation.

While efforts to afforest are being made, we should be aware that the rate of deforestation is far much greater than that of afforestation.

Experiments initiated to determine when corrosion began showed that the metal corroded upon contact with the saline solution.

We solicit any recommendation that you wish to make and you may be assured that any such recommendations will be given our careful consideration.

Careful thought should be given to the desirability of being in attendance at the convention and the value accruing to the institute from such attendance before asking us for the approval of the expenditure.

Selection practices in wheat breeding programs under high input conditions in order to exploit the maximum potential of genotypes have been questioned by several workers. The number of such criticisms are growing, particularly in developing countries, because of the present high cost of commercial fertilizers and other inputs.

Though some workers suggest breeding for sub-optimum soil fertility conditions, to date the theoretical evidence on the practicality of such an endeavor is non-existent.

An agricultural project is an investment activity where capital resources are made available to create a producing asset from which benefits are expected to be realized over a specific period of time.

In conducting a skills inventory of our staff, it is evident that some need assistance in advancing their capacity to converse in the written aspects of English, i.e., report and article writing.

Nutrition from the time of conception to fetal, infancy, childhood, adolescence, teenage and other stages of life still remains one of the important factors in achieving good health.

On average, a household has 11 members, with livestock owners having more members than non-livestock owners.

Since the majority of children between 7 and 15 years attend schools and are considered a part-time labor force, the potential farm labor force is small.

Ground cover assessment of the grazed area indicated very low cover.

Statistics on mild cases of malnutrition were completely lacking. A need was felt to establish a system that would introduce uniformity and accuracy on monitoring and recording the nutrition situation among children, and reporting of such data to higher levels so that meaningful intervention measures could be taken at each level to arrest the situation.

For optimum growth and cropping the coffee tree requires an adequate level of nitrogen at all times but the roots can only take up nitrates when the soil is moist.

Compound fertilizers are granular materials which are mixed fertilizers consisting of a mechanical mixture of powdered primary fertilizer materials which are granulated or compounded into similar sizes and screened to homogenous granules with a certain proportion of primary nutrients in each granule.

The study is an initial attempt to validate a diagnostic procedure in relation to modality and structure in a particular instructional situation.

Our Center formulates and conducts short courses designed to provide practical training and further knowledge to village and other artisans in the use and maintenance of agricultural and other Appropriate Technology machinery and equipment.

This is one of a series of modular instructional packages designed for use in rice-based cropping systems research training.

READING AND WRITING TECHNICAL ENGLISH This session will focus on specific strategies for working with written technical discourse, including the most prevalent structures and organizational patterns.

Papers on indigenous technologies and recent advances in sweet potato production were presented by the country representatives. The presentors with their respective country were as follows: Q. H. Xue, Q. Han, China; G. M. Nair, India; K. M. Hussain, Malaysia; ...

In 1962, it was decided by the four countries concerned to terminate the inter-territorial research.

The disease is very debilitating and renders the victim highly unproductive with resultant drain in man-power resources especially for agricultural purposes, since most people affected are rural dwellers whose main occupation is farming and animal rearing.

The application of research results would eventually lead to the control of the diseases.

It is of paramount importance to detect the causative organisms of any disease in order to carry out effective treatment and control.

In the event that the fire alarm is sounded, please vacate your room as speedily as possible and congregate outside the building.

The release of mass-reared natural enemies is of little operational value because the procedure is too costly in proportion to its effectiveness in reducing the number of the target mosquitoes in the field.

Because of the war in Kampuchea, almost no scientific human resources competent in rice science are available.

Since 1960 the food security challenge in Asia has undergone a great change. The challenge in the sixties and seventies was physical access to food. The problem now is not just the quantitative adequacy of food in the market but the adequacy of purchasing power of the rural and urban poor to buy food.

10
Four sample schedules and evaluation form

A sample ten-week schedule

		MORNING		AFTERNOON
Week 1		**EDITOR, AUTHOR, READER**		**PHOTOGRAPHY**
Monday		Orientation, introductions	6.9	Taking photographs
	1.1	What does an editor do? and why?		Field exercise with camera
	1.2	Communicating		
		Exercise 1.2		
Tuesday	1.3	Planning for publication 1	6.8	Basics of photography
	1.4	Planning for publication 2		Field exercise with camera
		Exercise 1.4		
Wednesday	1.5	The right words for the reader	6.5	Choosing photographs
		Exercise 1.5; Project exercise 1		Exercise 6.5
Thursday	1.6	Knowing the reader	6.6	Using photographs for effect
	1.7	Asking authors about readers (distribute only the first page)		Exercise 6.6
		Exercise 1.7		
Friday	1.8	Finding good manuscripts	6.7	Writing captions
	1.9	Being an editor	6.10	Preparing illustrations for the printer
				Project exercise 2
Week 2		**USING WORDS**		**USING TYPE**
Monday		Test on Module 1	7.3	Typefaces and type measures
Tuesday	2.1	About words	7.3	Typefaces and type measures (cont.)
		Exercise 2.1		
Wednesday	2.2	Words and meanings	7.4	Easy reading: the typeface
	2.3	Using concrete words		
		Exercises 2.2, 2.3		
Thursday	2.4	Building forceful sentences	7.5	Easy reading: other variables
		Exercise 2.4		
Friday	2.5	Rules for readability	7.6	Guideposts in type
		Exercise 2.5		

		MORNING		AFTERNOON
Week 3		**REACHING THE NON-SPECIALIST**		**PRINT PRODUCTION**
Monday	2.6	Testing readability Exercise 2.6; Project exercise 3	8.1 8.2	The beginning of printing Printing
Tuesday		Test of Module 2, Units 7.3–7.6	8.3 8.4	Composition Assembly for printing
Wednesday	5.1	Planning to reach the non-specialist Exercise 5.1	8.5	Reproducing illustrations
Thursday	5.2	Helping the non-specialist understand Exercise 5.2		Field trip to printer
Friday	5.8	Interviewing for information Exercise 5.8, 5.3a	8.6	Binding
Week 4		**NEWSLETTERS**		**NEWSLETTERS**
Monday	5.3	Capturing the reader's interest Exercises 5.3b, 5.5	7.11	Design in newsletters
Tuesday	5.6	Newsletters: planning Exercise 5.6		Newsletter workshop
Wednesday	5.7	Newsletters: editing		Newsletter workshop
Thursday	5.4	Capturing interest with titles		Newsletter workshop
Friday	7.12	Preparing a dummy		Newsletter workshop: dummying
Week 5		**THE EDITOR'S MANY TASKS 1**		**ILLUSTRATION; ESTIMATING**
Monday	3.1	What to do first Exercise 3.1		Newsletter workshop Newsletter OK'd for printing
Tuesday	3.2	Improving organization Exercise 3.2	6.1	Illustrating the text
Wednesday	3.3	Editing for detail	6.2	Working with artists and artwork Project exercise 4
Thursday	3.4	Things to watch	9.1	Estimating length of a manuscript
Friday	3.5	More things to watch	9.1	Estimating length of a manuscript Project exercise 5

		MORNING		AFTERNOON
Week 6		**DESIGN**		**ILLUSTRATIONS**
Monday	7.1	Planning design	7.9	Designing a publication
Tuesday	7.2	First choices		Design workshop for project
Wednesday	7.7	Page formats		Design workshop for project
Thursday	7.8	Covers		Design workshop for project
Friday	7.10 7.13	Design with typewriters Last design tips		Design workshop for project
Week 7		**EDITING FOR THE SPECIALIST**		**ILLUSTRATIONS**
Monday	4.1	Journals	6.3	Editing graphs
Tuesday	4.2	Editing articles 1	6.4	Editing maps
Wednesday	4.3	Editing articles 2		Project workshop
Thursday	4.4	Citations and references Exercise 4.4		Project workshop
Friday	4.5	Editing tables Exercise 4.5		Project workshop
Week 8		**THE EDITOR'S MANY TASKS 2**		**PROJECT WORKSHOP**
Monday	3.7	Instructing the typesetter		Project workshop
Tuesday	3.8	Checking proof first proof		Project workshop
Wednesday	3.9	Checking proof later stages		Project workshop
Thursday	3.6	Working with authors		Project workshop
Friday	4.6	Editing conference proceedings		Project workshop
		PROJECTS COMPLETE FOR PRODUCTION		

		MORNING		AFTERNOON
Week 9		**PRODUCTION MANAGEMENT**		**REACHING THE READER**
Monday		Day off		Day off
Tuesday	9.2	Costs and one-time costs	11.1 11.2	Promotion Enlisting the author
Wednesday	9.3	Variable costs	11.3	Direct mail
Thursday	9.4	39 ways to reduce production costs	5.11	Public relations
Friday	9.5	Choosing a printer Project exercise 6	5.12	Writing press releases Exercise 5.12
Week 10		**THE BUSINESS SIDE**		
Monday	10.1	Principles of copyright	4.1	Editorial review
Tuesday	10.2	Responsibilities of author and publisher	9.6	Innovations in information transfer
Wednesday	10.3	Keeping track and keeping in touch		Field trip
Thursday	10.4	The budget for a publication		Review of course
Friday	10.5	Evaluating publications		Graduation

A sample two-week schedule (using a two-fold folder as a project)

		MORNING		AFTERNOON
Week 1				
Monday		**Orientation and introduction**		**Author, editor, reader**
		Opening remarks	1.1	What does an editor do? and why?
		Pre-course evaluation of trainees	1.2	Communicating
			1.9	Being an editor
Tuesday		**Communication strategies**		**Designing publications 1**
	1.3	Planning for publication 1	7.3	Typefaces and type measures
	1.4	Planning for publication 2	7.4	Easy reading: the typeface
		Project: announce teams	7.5	Easy reading: other variables
			7.6	Guideposts in type
		Evening: Teams choose topic for folder and decide individual roles		
Wednesday		**Publishing for non-specialists 1**		**Designing publications 2**
	5.1	Planning to reach the non-specialist	7.2	First choices
	5.2	Helping the non-specialist understand	7.7	Page formats
	5.3	Capturing the reader's interest	7.11	Design in newsletters
		Exercise 5.5	7.13	Last design tips
		Evening: Teams begin planning organization and design of folder		
Thursday		**Publishing for non-specialists 2**		**Introduction to print production**
	5.9	Planning folders		Draw upon units 8.2-8.6
		Discuss Exercise 5.5	9.4	39 ways to reduce production costs
	5.6	Planning newsletters		
	5.7	Editing newsletters		
	5.4	Capturing interest with titles		
		Evening: Teams proceed with first draft of text and design of folder		
Friday		**Effective writing 1**		**Field tour of local printing establishment**
	2.3	Using concrete words		
	2.4	Building forceful sentences		
		Assign selections from Exercises 2.3, 2.4		
		Evening: Teams proceed with first draft of text and design of folder		
Saturday		Sightseeing tour in vicinity		
Sunday		Teams complete first draft of text and design for submission first thing Monday morning for review during the day by trainers		

		MORNING		AFTERNOON
Week 2				
Monday		**Effective writing 2**		**Photography**
		Discuss Exercises 2.3, 2.4	6.5	Choosing photographs
	2.5	Rules of readability	6.6	Using photographs for effect
		Exercise 2.5	6.7	Writing captions
				Field practice with camera
		Evening: Teams revise first draft of folder on basis of trainers' review		
Tuesday		**Editing 1**		**Working with proof**
		Discuss Exercise 2.5	3.8	Checking proof: first proof
	3.3	Editing for detail	3.9	Checking proof: later stages
	3.4	Things to watch	7.12	Preparing a dummy
	3.5	More things to watch		
		Evening: Teams edit revised draft for details and style for submission first thing next morning for typesetting by word processor or desktop publishing unit		
Wednesday		**Editing 2**		**Visual language**
	3.2	Improving organization	6.1	Illustrating the text
	3.6	Working with authors	6.2	Working with artists and artwork
	3.7	Instructing the typesetter	6.10	Preparing illustrations for the printer
		Evening: Teams proofread galleys and prepare dummy		
Thursday		**Promotion and distribution**		**Interpreting data**
	11.1	Promotion	6.3	Editing graphs
	10.5	Evaluating publications	4.5	Editing tables
		Evening: Teams check final pages and OK (with corrections) for printing. OK'd pages submitted for printing first thing next morning.		
Friday		Post-course evaluation of trainees		Presentation of team projects
		Evaluation of course		Graduation
		Final discussions		

A sample one-week schedule

		MORNING		AFTERNOON
Monday		**Orientation and introductions**		**Effective writing**
		Opening remarks	2.3	Using concrete words
		Editor and author		
	1.1	What does an editor do? and why?	2.4	Building forceful sentences
	1.2	Communicating		Exercises 2.3, 2.4
	1.6	Knowing the reader		
	1.9	Being and editor		
Tuesday		**Readable writing**		**Scientific publication**
		Discuss Exercises 2.3,2.4	4.2	Editing articles: title, author, abstract
	2.5	Rules for readability	4.3	Editing articles: text
		Exercise 2.5		
Wednesday		**Editing**		**Scientific publication**
	3.3	Editing for detail	4.4	Citations and references
	3.4	Things to watch	4.5	Editing tables
	3.5	More things to watch		Exercise 4.5
	10.1	Principles of copyright		
Thursday		**Editing and production**		**Printing processes**
	3.7	Instructing the typesetter		(field trip)
	3.8	Checking proof: first proof		
	3.9	Checking proof: later stages		
Friday		**Illustrations**		**Working with authors**
	6.2	Working with artists and artwork	4.7	Editorial review
	6.10	Preparing illustrations for the printer	3.6	Working with authors
	6.3	Editing graphs		Closing ceremony

A sample one-day schedule

MORNING		AFTERNOON	
1.2	Communicating	7.11	Design in newsletters
1.3	Planning for publication	7.10	Design with typewriters
1.6	Knowing the reader	7.13	Last design tips
5.6	Newsletters: planning		
		6.5	Choosing photographs
5.7	Newsletters: editing	6.6	Using photographs for effect
2.3	Using concrete words	6.1	Writing captions
2.4	Building forceful sentences		
2.5	Rules for readability		Field practice with Polaroid camera
5.3	Capturing the reader's interest		
5.4	Capturing the interest with a title		

A sample evaluation form

CONFIDENTIAL QUESTIONNAIRE
We hope this will be only the first workshop of its kind and others will follow. To help in the planning of future workshops in this field, please complete the following questionnaire.

1/ Please indicate how useful you found the following topics:

	least useful				most useful
Identifying the reader	1	2	3	4	5
Planning for publication	1	2	3	4	5
Effective writing techniques	1	2	3	4	5
Capturing the reader's attention	1	2	3	4	5
Organization of text	1	2	3	4	5
Details of syle (copy editing)	1	2	3	4	5
Process of print production	1	2	3	4	5
Design for print	1	2	3	4	5
Folders	1	2	3	4	5
Newsletters	1	2	3	4	5
Tables, graphs and illustration	1	2	3	4	5
Photographs and photography	1	2	3	4	5
Distribution and promotion	1	2	3	4	5
Evaluation of publication policies	1	2	3	4	5
Public relations	1	2	3	4	5
Dissemination: issues, strategies, policies	1	2	3	4	5
Patent law	1	2	3	4	5
Copyright and other publishing law	1	2	3	4	5
Responsibilities of author and publisher	1	2	3	4	5

2/ Please indicate, in order, which three of the above topics you found most useful.

1/ _____

2/ _____

3/ _____

3/ Do you think the course was

too long _____ too short _____

about the right length _____ (check one)

Comments _____

_____

4/ Were there topics you would have liked the speakers to discuss in greater depth?

Yes_____ No _____

If "yes", what were these topics? _____

_____

5/ Were there topics. you think might have been omitted?

Yes _____ No _____

If "yes", what were they? _____

_____

6/ Did you find the practical team project, planning and writing a folder, a helpful exercise?

Yes _____ No _____

Comments _____

_____

7/ Were the speakers well prepared? Yes _____ No _____

Was the teaching method appropriate for the subject and for the participants?

Yes _____ No _____

8/ Were the speakers well prepared? Yes _____ No _____

easy to understand? Yes _____ No _____

Have you suggestions for their improvement? _____

_____

_____

9/ Were the field trips useful?

To the printer? Yes _____ No _____

To the research institute? Yes _____ No _____

Are there other field trips you would have liked to have seen included? If so, what are they?

_____

10/ Are there additional topics you think should be included in future workshop: If so, please list them.

_____

_____

11/ Do you think the size of the workshop (20 registrants) was

too large? _____ too small? _____ about right? _____

12/ Are there further changes you would suggest to improve the content, teaching, approach, and organization of future workshops?
(Please use a separate sheet of paper if necessary.)

13/ What use do you expect to make of the training from this workshop when you return to your home institution?

In particular, do you plan to share the knowledge with your colleagues?

Yes_____ No _____

If "yes", how do you propose to do this? _____

_____

14/ What constraints do you expect to meet in making use of the training at your home institution?

15/ Further comments? (Please use a separate sheet if necessary.)

16/ Please indicate your principal area of interest or responsibility.

Research _____ Extension _____

Publication _____ Other _____

Please complete the questionnaire before lunch on Friday and give it to one of the course resource people. You do not need to sign it. Responses will be confidential.

Thank you.

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