Information Technology and Human Resources Development: The World Health Organization's HRD ToolKit

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Abstract

Modern information technology can greatly increase country access to the world's expertise and experience regarding the development of human resources for health.

In order to facilitate the exchange of world experience and assist countries with health workforce planning, training, and management WHO has developed multiple computer-based resources. These resources include several thousand pages of text on diverse human resources development topics, run-time spreadsheet models for generating alternative planning scenarios and for preparing workforce plans, slide show presentations, and references to other sources of information. They are now available on a file compressed floppy diskette and will soon be available on CD-ROM and WHO's internet website.

More than 200 persons from over 60 countries have received training in the scenario models, some countries are starting to apply them, and many countries now have the diskette-based *ToolKit*.

Key words: Health personnel; health planning; education and training; personnel management; planning techniques; planning models; computer simulation; World Health Organization; technology transfer.

Introduction

The World Health Organization has always given priority to the development of *human resources for health* (HRH) as a critical way for Member States to achieve self-reliance and sustainability. In recent years WHO has augmented its traditional forms of assistance in this area – training fellowships and workshops, consultant visits, and publications – with a low cost yet increasingly comprehensive resource, a computer-based ToolKit distributed under the title, *HUMAN RESOURCES FOR HEALTH: A ToolKit for Planning, Training and Management*. Initiated in the late 1980s, the *ToolKit* now has several major documents and soon will be adding more. This article provides brief descriptions of each component and additional information may be obtained from the authors.

ToolKit Resource Document.

WHO has published numerous documents relevant to *human resources development* (HRD), a term which encompasses HRH *planning, training* and *management*, and some journals besides this one also are relevant to the field. These publications suffer from limitations common to many paper-based documents, most importantly high cost, which in turn limits page length, topic scope, press run, ability to purchase enough copies (due both to costs and to foreign exchange limitations), and infrequent update. Moreover, using the

index to search for a specific topic covered in many parts of a large paper-based document can be very frustrating. To address these problems in 1989 WHO started work on a computer-based human resources development "toolkit". By 1999 the *ToolKit* had come to occupy almost 2 megabytes (almost 1000 pages of text) on a single file-compressed high density floppy diskette and was available from WHO in Word Perfect. Given the versatility of the computer-based medium, the advantages of this sort of *ToolKit* include: low cost; easy to copy, carry and distribute; relevant sections can be downloaded for printing, with or without translation and adaptation to local circumstances; no practical size limits since topics can be searched using keywords; specialized files such as slide shows and spreadsheets can be included, and the ability to accommodate multiple authors with diverse expertise and viewpoints.

Important as are the advantages of having comprehensive HRD information on a diskette, the *ToolKit* has hardly begun to realize its full potential. The diskette files are not especially easy to search and they are only available in WordPerfect, distribution has been very limited, and the *ToolKit* is far from complete. Of the planned topics, only about half are completed on planning and management, and less than 10% on training.

Efforts are underway to address these problems. In mid-1999 WHO commissioned a project which, by mid-2000, will double the size of *ToolKit* with important new sections and make it available both on WHO's website as well as a CD-ROM. With the accessibility advantages of the internet and a new search engine to facilitate locating topics of interest, the document will become much more widely available and easier to use. Regarding content, though additional sections will soon be available, as an electronic document the *ToolKit* will never be truly complete since topics can be easily added, updated or deleted as changes occur in the art and science of human resources development.

ToolKit organization and content.

The *ToolKit* opens with an overview to the document -- its rationale, organization, a listing of the almost 20 major sections now available, instructions regarding searching and downloading files, and guidance to potential authors wishing to contribute materials. Most sections are in text with the remainder available either as spreadsheets or presentation slide shows. The major component parts of the *ToolKit* are described below.

Topics and appendices

Almost a third of the *ToolKit* is devoted to more than 100 topics and over 60 appendices concerned with a wide variety of areas in HRH planning, education and training, and management. *Topics* typically consist of 1-5 pages on specific subjects such as projecting workforce supply, designing a personnel recruitment system, or evaluating a training program. Topic text is brief but in full sentences, and references are provided to other materials in the *ToolKit* and elsewhere. As compared with topics, *appendices* tend to be longer (up to 20 or more pages). They provide a diversity of backup materials such as instructions about how to apply a method, template questionnaires, data collection instruments, country case studies, checklists and inventories, illustrative data tables, and workshop training exercises.

Occupation-specific toolkits.

In mid-2000 a toolkit of over 350 pages will be introduced for nursing personnel. Building on the generic HRD materials available elsewhere in the *ToolKit*, this occupation-specific toolkit provides materials specifically relevant to the planning, training and management of professional and auxiliary nurses. In time WHO hopes to include additional occupation-specific toolkits for medical, oral health, and technical personnel.

Guidelines

Seven 30- to 60-page *guideline* documents are now in the *ToolKit* and by mid-2000 additional ones will be available. Guidelines provide much more detailed information about such topics as: conducting a comprehensive planning study; conducting a brief HRH review; conducting a planning workshop; designing a HRH information system; developing workload-based staffing standards; functional job analysis; indicators and standards useful for monitoring work performance; and legislative and regulatory aspects of HRH.

HRH Scenario Models

WHO has long worked to improve decision-making regarding the quantitative aspects of workforce policy. Past methods of projecting workforce supply and requirements have either been based on simplistic population-health worker ratios or occasionally, on sophisticated, time-consuming methods best used in industrialized countries. With the assistance of Japanese government support, in 1990 WHO commissioned the development of spreadsheet-based projection models. Since they were primarily designed for use in developing countries, specifications called for: usable on a microcomputer; emphasis on public sector personnel but including the private sector; ability to accommodate different types of health systems and levels of input data; a deterministic model, since data required for stochastic models are seldom available; and the ability to test economic feasibility. By mid-1999 more than 200 persons from over 60 countries have received from 5 to 8 days of training in the models in workshops held in all six WHO regions. Two sets of scenario models are now available for longer-term and for intermediate-term projections. Both sets of models:

- develop projections based entirely on user-defined inputs;
- accommodate varying levels of data inputs depending on availability;
- project supply up to 30 years and requirements to any year;
- can produce intermediate year projections between the base and target years;
- can test the likely economic feasibility of requirements projections;
- take into account both public and private sector requirements;
- include optional modules for countries that wish to use them, e.g., production of ambulatory and hospital services;
- provide graphs and summary data and indices to facilitate interpretation;
- use split computer screens to visualize input effects on outputs;
- can compare multiple scenarios on a single screen or table;
- can combine multiple sub-national projections into a national projection;

- provide context sensitive on-line help for all tables;
- have task-specific icon buttons to facilitate data entry and management;
- include a simulated data file for use in demonstrations and training;
- include many utility tables to help with intermediate planning tasks; and,
- have supplementary written documentation.

The unique characteristics of the two sets of models are described below.

HRH model

This model, referred to as HRHLong and written in run-time, stand-alone VisualBaler software, is now available in Version 3.0 and in the English, Spanish and French languages. It is best for making longer term (15-30 years) strategic scenario projections, and is supplemented by a 300-page document in English that covers model structure, rationale, data collection and sensitivity analysis, scenario manipulation, policy analysis, and troubleshooting. Workforce supply projections can be made by either the simple *assumed annual loss rate method* or the more precise *cohort loss rate method*. One version of the *target setting method* is used to project requirements in five different work settings, viz: public sector hospitals and affiliated clinics; public sector clinics without beds; academic settings; public health settings not based in hospitals or clinics, e.g., Ministry of Health, National Inst. of Health, etc.; and the private sector. This model can also project scenario requirements for medical and nursing specialists, and of the urban-rural distribution personnel and services.

HRHShort model

With the introduction of the HRH model it became evident that many countries could also use a shorter-term model and would welcome a model that was simpler to use. HRHShort, also programmed in VisualBaler, was introduced in 1998 and further refined in 1999. In addition to the common features shared with the HRH model, HRHShort offers users two simple methods of projecting supply, it combines the supply and requirements tables on the same rather than separate spreadsheets, and it offers three alternative ways of projecting requirements, including one that is very easy. This model is now available in English.

Since most countries now use the MS Excel spreadsheet software, both sets of models will soon be available in MS Excel and in Russian translation as well as in Spanish and French. This software will make it possible for computer-knowledgeable users to change the models, to add new features, to troubleshoot and correct problems, and to translate column and row headings into their own language.

Workforce Planning Workbook and Model

The Western Pacific Regional Office of the WHO contracted with the WHO Regional Training Centre located at the University of New South Wales, Sydney, Australia, to develop a planning model suitable for the small Pacific Island countries. This model, presented in a 44-page MS Word workbook document supplemented by MS Excel

spreadsheet files, has now been introduced to many countries, both large and small, in the Western Pacific region and beyond. The *Planning Workbook* is divided into the seven chapters described below: Policy and planning guidelines, planning assumptions and constraints, and the organisational arrangements for planning.

- Current staffing situation and identify staffing problems;
- Review of current training facilities and training programs;
- Staffing and training projections for the larger groups of health personnel and for particular divisions and units within the health service;
- Estimate of the future cost of training activities and the employment of staff;
- List of any needed support from external development assistance agencies; and,
- Arrangements needed for implementation, monitoring and adjustment so that the plan is maintained as a 'rolling' plan, regularly reviewed and up-dated to meet the inevitable situational changes which confront every health service.

By following the embedded instructions chapter by chapter users can replace the synthetic text and data for the imaginary country, *Planania,* with that applicable to their own country. When complete, these chapters become a draft health workforce plan.

Repeated workshops have demonstrated the feasibility of preparing a reasonably complete draft workforce plan in little more than a week based on existing documentation of health service policies, national development plans, institutional and service annual reports and personnel department records. *Workbook* users will, of course, have to then refine their quantitative estimates and to consult with senior decision-makers, service managers and providers of training for guidance as to policy directions, service development and training-related activities. The *ToolKit* contains a brief description of this planning model and makes it possible for users to download the complete software files.

Slide show presentations
The ability to present concepts and content clearly is becoming ever more important for those involved in the complex and often controversial field of HRD. Fortunately, the availability of powerful presentation software is making this task easier. With the shift of the *ToolKit* from a floppy diskette to the more versatile internet and CD-ROM formats, it will now be possible to include a number of Microsoft PowerPoint slide shows on diverse HRD topics.

Annotated bibliography
Searching the published world literature has become both very much easier with online sources such as the National Library of Medicine's *Medline*, and because of the huge variety of materials available, far more difficult. A search term such as "health personnel" will generate many thousands of citations, and even a much more specific search strategy will generate a large number of citations, many of which will be no more than letters to the editor, brief comments or case studies. With the internet version of the *ToolKit* a new section will be started containing a list of the most relevant (to HRD) and still accessible

WHO publications, along with a small start on what could become an annotated bibliography to the most relevant world literature.

Links to other sources of information
Many other internet sites such as those operated by the World Bank, universities, research institutes and consulting firms have valuable HRD-relevant information. These sites will be identified and links established with the *ToolKit*.

HRD and the Age of Information Technology
The *ToolKit* realities and plans for expansion give some notion of the great opportunities that lie ahead for facilitating the exchange of information about HRD. However, in its present form the *ToolKit*, like all its predecessors such as books and manuals, is a *passive* instrument for knowledge transfer, totally dependent on the interest, initiative and persistence of the user. To supplement this passive exchange of information WHO has sought ways to facilitate the *active* exchange of ideas, information and experiences among both those who are already involved in HRD as well as newcomers to the field. At a WHO sponsored workshop of HRD consultants and activists held in Modra, Slovakia, in October, 1998, the participants urged the creation of a managed listserve website that could accomplish this purpose, and these same views are frequently expressed at training workshops. Such a listserve would require a host organization and small operating budget, neither of which has yet been identified. Ways are now being explored as to how the core elements of a HRD listserve might be created, as precursor to a more comprehensive capability. Based on the experience of numerous other listserves, if a HRD listserve eventually becomes available, the ability to promote and strengthen all aspects of human resources development – planning, training and management of the health workforce – will be greatly enhanced.

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