THE COMMONWEALTH of LEARNING

PERSPECTIVES ON
DISTANCE EDUCATION

# Skills Development through Distance Education

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*Arun K. Mishra and*
*John Bartram, Editors*

# THE COMMONWEALTH *of* LEARNING

*The Commonwealth of Learning (COL) is an intergovernmental organisation created by Commonwealth Heads of Government to encourage the development and sharing of open learning and distance education knowledge, resources and technologies.*
*Part of its mandate is to assist teaching institutions in Commonwealth member countries that wish to apply open, distance and technology-mediated learning methods to vocational education and training. If you would like to consult COL, please contact John Bartram at jbartram@col.org.*

*This book is dedicated to Judith Calder.*

*Judith passed away on 31 March 2002 after a long fight with cancer. She was one of the few writers who advocated the use of open and distance learning to give access to vocational education and training. She was part of the steering committee that put form and shape to this book and who also nominated many of the writers. She herself contributed a chapter.*

*We are very grateful for her inspiration and her contribution*

*Arun Mishra      John Bartram*

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# PREFACE

Reducing poverty is one of the fundamental aims of the internationally agreed-upon Millennium Developmental Goals. Through a variety of mechanisms, nations hope that by the year 2015 the proportion of people whose income is less than $1 per day and those who suffer from hunger and other deprivations can be drastically reduced to about 50% of present levels. To meet this aim, more than half the world's population requires access to better education and health; safe food and water; and a sustainable environment.

One of the many strategies being actively promoted to achieve this goal is to provide training and retraining for many unskilled workers (many of whom are the sole breadwinners in developing economies) to enable them to move out of low-skill, poor-wage situations and into higher-skilled and higher-wage opportunities. There are some two billion people in the global workplace, and *all* of them need some form of training.

Technical and vocational education and training therefore becomes an important aspect of the Millennium Development Goals. But traditional systems of training individuals for technical and vocational careers often cannot meet the massive need. Among the options available to achieve the targets of the Millennium Development Goals is the application of open and distance learning (ODL) methods. Over the past 30 years, trainers all over the world have come to appreciate the immense value of using ODL methods to provide continuous, "just-in-time" training for workers in a range of fields — from farming to electronics, health to engineering, or animal husbandry to automobile engineering. However given the enormous challenges facing workforce training over the next several years, much more needs to be done. It is in this context that The Commonwealth of Learning wishes to bring to your attention recent experiences in the use of ODL methods for skills development.

In this book, as in all our publications in our Perspectives on Distance Education series, a team of expert practitioners from around the Commonwealth have been drawn together to share their experiences — in this case on skills development through distance education. Their discussion illustrates the very imaginative ways in which skills development is currently delivered throughout the Commonwealth and raises a number of questions relating to quality and relevance of adopting such training methodologies. All those interested in skills development as a continuous lifelong activity will find this publication of immense value.

A book of this kind could not happen but for the dedication and commitment of a number of people, most important of whom are the authors themselves. As always we are grateful to these Commonwealth experts for their dedication and commitment to the task. We are also grateful to the editor Arun Mishra for his patience and understanding

in seeing this project through, despite a few personal challenges. The Commonwealth Secretariat, London made both financial and expert contribution to this work. My colleague John Bartram, through his own enthusiasm, ensured that what we set out to do through this project was accomplished. The Commonwealth of Learning is grateful to all of these people.

This book is dedicated to the memory of a special friend of The Commonwealth of Learning, Professor Judith Calder of the British Open University. Judith, a pioneer in the field, contributed a chapter to this volume. Judith passed away a few months before publication.

*Dato' Professor Gajaraj Dhanarajan*

*President and Chief Executive Officer*
*The Commonwealth of Learning*

# INTRODUCTION

*Arun K. Mishra*

The access to knowledge and skills to all people regardless of gender, age, race or location is enormously important. Education and training must be all-inclusive and reflect the vastly diversified present economy and various fields of human-power needs. COL has been striving to meet this goal.

Technical and vocational education and training (TVET) comprehensively includes all forms of technical education, vocational education and technical and vocational training irrespective of stage (excluding higher education). It also covers non-formal courses of adult and continuing education. Given this scope of TVET, just about all learner groups become the clientele for this monograph on skill training for economic development.

Open and distance learning (ODL), similarly, is a comprehensive term for the modality employed, but it naturally leaves outside its fold those programmes of TVET offered in formal education and training institutions through conventional contact schooling practices. While the thrust of ODL for many years has been on various conventional disciplines of liberal education, the growing diversity in various learner groups and advances in educational technology have lead us to accept that the benefits from TVET through ODL are far greater than from other types of courses. Quantitatively the numbers that can be reached are very large, and qualitatively the areas in which this form of education and training are of the unprecedented dimension. Instruction occurring not merely through various distance learning techniques, but also in real-life situation on work sites is more conducive to better learning of theory and skills. The large number of learners who can be reached over several years offsets the overall high initial cost.

However, all the promises of ODL/TVET should not keep us from recognising some of the constraints and limitations. First of all, TVET itself is not a preferred area of learning, and in many countries its status is low and acceptance limited. The current digital divide between the developed and developing world is also an important factor. No doubt the latest information and communication technologies are spreading rapidly, but there are large population segments where their use or even casual familiarity is scarce. E-mail and other interactive modalities such as video and teleconferencing, compact disc or CD-ROM are unheard of. In such situations the quality of instruction suffers and ODL is relegated to print materials and postal delivery modalities.

Many of the different aspects of TVET through ODL are highlighted in the chapters that follow. It is hoped that planners, administrators, teachers, curriculum developers and others concerned will find them useful and persuasive enough to opt for TVET in the ODL system as a priority in policy, planning, financing and other aspects of programme implementation.

Chapter 1, on economic development and skills development, lays down the conceptual framework and sets the stage for the chapters that follow. It highlights the contextual aspects and the current trends in social and economic development that TVET must address. It also attempts to define various terms that are commonly used while recognising the fact that there is overlap and ambiguity in their use and that the dictionary meaning may not be the most accurate. Various desirable policy directions and underlying issues are also given in brief.

In chapter 2, Judith Calder introduces the readers to the various key players in designing and delivering TVET via ODL through two case studies. The reader is lead to realise that there are many key players in the process and that they join hands to provide appropriate TVET programmes. Calder presents a comprehensive account of seven types of providers of TVET instructional materials in terms of development, adaptation, selling or procuring.

In chapter 3, Magnus John discusses potential learners and characterises them as lifelong learners in the context of globalisation as well as the use of technology available in different countries for imparting TVET via ODL. The range of skills needed for economic development of a country has substantial bearing on who the potential learners are in this system. The universal inclusion as opposed to exclusion of certain groups is the crux of the matter.

Keith Dunbar discusses curriculum development in chapter 4. He makes the point that TVET curriculum is always learner centred since it stresses the process of learning by doing. The realities of the working world are at the core of TVET curriculum development. The philosophical approaches to curriculum are presented, followed by a discussion of DACUM. The national standards prevailing in Canada, UK and Australia are covered. The significance of acquiring essential skills such as critical thinking, numbers, communicating, teamwork, etc. are also highlighted.

Neville Weal discusses the identification of needs and programme evaluation in chapter 5. The attributes of a TVET programme have been identified as relevance, flexibility, effectiveness and efficiency, accessibility, sustainability in terms of resource availability, and compatibility with general requirements of the society at large. The course development process includes analysis, design, development, implementation and evaluation. The process of learning needs analysis is discussed in detail including a curriculum development checklist.

Ved Goel, in chapter 6, discusses student support services as a component of ODL for TVET. He presents the academic areas of student support such as study centres and tutoring along with an in-depth discussion of audio-, video-, telephone- and computer-based technologies. Virtual university and online delivery is also discussed.

Carol Hampton and John Bartram explain the important area of delivering the programme in chapter 7. Work-based learning, on-the-job training, adoption of technology, learning centres and delivery strategies in general are covered.

Dermot Moore, Annemarie Bates and Jean Grundling discuss instructional design in chapter 8. The complex process of designing and developing instructional materials is covered using two different models.

The teaching of practical skills holds the key to successful TVET via ODL. This is the subject matter of chapter 9 by Carol Hampton, who presents a number of successful approaches that have recently emerged. Appropriate learning materials are of critical importance. Print, audio, CD-ROMs and online materials are most notable, as they can be used in a variety of learning environments such as mobile classrooms, learning centres and industry work sites. The chapter concludes with assessment.

Olabisi Kuboni has written chapter 10 with particular reference to small island countries. She discusses quality assurance in the delivery of TVET via ODL. These quality assurance parameters, according to Kuboni, are either non-existent or in the early stages of development. The case of Trinidad and Tobago has been chosen for a detailed analysis.

Mobility and articulation of TVET with other stages or areas of study are discussed by Adrian Haas in chapter 11. He defines articulation and highlights its importance. He argues that there are many barriers to proper articulation in several countries and that effective articulation channels have not been put in place. The idea of a skills passport as introduced in Europe is discussed.

Staff training and retraining is the topic of chapter 12 by Marvin Lamoureux. The expanding horizon of TVET places increasing demand on training and retraining of personnel with limited available resources. The use of ODL for initial training as well as retraining is a viable proposition. Lamoureux asserts that sectoral, institutional and local level training and retraining must be given due attention to achieve the goals.

The final chapter by Dick Scales gives an overview of planning and management of TVET in a conventional education institution. He links together many of the concepts of the other chapters of the book to give a process-oriented account. He provides the beginner of TVET via ODL a means of putting various steps together to launch a modest programme of ODL in a conventional institution.

Readers may find some overlap and duplication as they read through the different chapters. As the various authors all have their own perspectives, they have developed their respective chapters accordingly as specialists in their fields. I acknowledge the generous contributions of all the chapter writers who have shared their life experiences.

I hope that this monograph in the series of Perspectives on Distance Education will prove useful to various stakeholders in TVET concerned with its implementation through ODL, and that it successfully meets the needs of vast and diverse clientele for skill development as a prerequisite to economic and social development as well as personal well-being.

# THE CONTRIBUTORS

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**ANNEMARIE BATES** has been an instructional designer in the Centre for Courseware Design and Development at Technikon SA since 1995. A particular focus of her work is the design and development of outcomes-based learning resources for distance learners. The knowledge and skills have been very effective in addressing learning facilitation through flexible learning resources for distance learners.

**JOHN BARTRAM** is currently the Education Specialist in Technical and Vocational Education and Training (TVET) at The Commonwealth of Learning. He works with governments and institutions in Commonwealth member countries to improve access to TVET through the use of open and distance learning. Previously he was the Manager of the UNESCO-UNEVOC Centre for Excellence in Vocational Education, working from the Adelaide Institute of TAFE in South Australia. In that capacity, he worked in the Asia-Pacific region providing a range of programmes to improve access to and the quality of training for employment and for self-employment.

**JUDITH CALDER** passed away on 31 March 2002. She studied Mathematics and Economics at the University of Wales and undertook her doctoral research on adult learning, change and use of media resources at Wolfson College, Oxford University. At the time of her death she was head of the Open and Distance Education for Lifelong Learning (ODELL) Research Group at the UK Open University, Senior Lecturer in Research Methods in the Student Research Centre of the Institute of Educational Technology and the external evaluator for The Commonwealth of Learning Literacy Project. She was previously head of the Student Research Centre and Deputy Director of the Institute of Educational Technology. She wrote extensively on distance education research and on research methodology at both the undergraduate and post-graduate levels. Her last book, *Open and Flexible Learning in Vocational Education and Training* (with A. McCollum), suggests that a number of different models of delivery are in use which run counter to learners' needs in the way they sequence the use of different media, personal support and modes of study.

**KEITH DUNBAR** has worked on provincial curriculum development in British Columbia, Canada, since 1985, including serving as the Acting Director of the former Centre for Curriculum and Professional Development for over three years. He also worked in the public post-secondary education system as Associate Director of the Continuing Education Division of Vancouver Community College, providing administration of part-time vocational continuing education courses. He started his career as a community adult educator in the Northwest Territories, where he was responsible for preparing and delivering adult education activities for a predominantly Inuit population. Keith holds his B.A. in Sociology and his M.Ed. in Adult Education from the University of British Columbia, and he is a Past President of the Canadian Vocational Association.

**Ved Goel, Ph.D.** (Science Education, University of Maryland), is the Chief Programme Officer for Science Technology and Mathematics Education in the Commonwealth Secretariat. He is also the Honorary Secretary for the Commonwealth Association of Science Technology and Mathematics Educators. Ved has expertise in different aspects of science education (curriculum development, teacher education, gender issues and assessment) and basic education. He managed a large and complex human resource development component of a UK-funded basic education project in India. He has also taught in India, Nigeria and the US. He is the co-author of many Indian science textbooks and distance learning modules in physics. He led the development of training of laboratory technicians through distance mode in Asia and Africa. Ved has worked as a consultant to bilateral and multilateral organisations on institutional development and teacher education in basic education.

**Jean Grundling** is a facilitator of adult and distance learning in the subject field Management Leadership at Technikon SA. She holds an M.Phil. in Adult Education and has 6 years' experience in distance learning. She is currently Executive Assistant to Dermot Moore, where she has insight in the management and administration of higher education institutions.

**Adrian Haas** trained as an electrical engineer before entering the field of TVET as a teacher in 1972. His interest in comparative TVET educational articulation and lifelong learning issues developed when he was Associate Director International Programs at RMIT University in Melbourne, Australia, where he also had responsibility for the UNESCO UNEVOC Centre at RMIT (1994–1999). He edited the UNESCO-UNEVOC publication *Case Studies in Technical and Vocational Education in Asia and the Pacific* (1995), which looked at TVET initiatives in 13 countries in the Asia/Pacific region, and he is also the author of the UNESCO-UNEVOC *Trends in Articulation Arrangements for Technical and Vocational Education in the South East Asian Region* (1999). He has a Ph.D. in Education from LaTrobe University, Melbourne, and he continues to have an ongoing interest in technician-level engineering education. He is a fellow of the Institution of Engineers Australia and continues to work as an educational consultant.

**Carol Hampton** has worked closely with management and teaching staff to implement alternative teaching and learning strategies at Onkaparinga Institute of TAFE since 1997. As the Manager of the Education Technology Centre, she has encouraged a blended approached to educational practice and has been instrumental in increasing the adoption of a wide range of approaches to enhance flexibility and access to study by adult learners, especially in remote and rural South Australia. Strategies have included the establishment of a strong network of learning centres, the adoption of increased educational technology and wider acceptance of workplace learning. These have required access to and the development of improved self-paced learning materials and extensive professional development for teaching staff. Key factors have been increasing learner satisfaction and learning effectiveness while reducing costs within an environment of contracting educational expenditure. This has occurred during a period of rapid change and increased competition within the Australian TVET sector. Carol is an educator first and foremost with 25 years of teaching experience within technical and further education.

**Magnus John** currently works as Head of the Institute of Library, Information and Communication Studies at Fourah Bay College, University of Sierra Leone. Prior to that, he worked for several years at the UK Open University in Milton Keynes, UK.

**OLABISI KUBONI** is the Campus Coordinator of the University of the West Indies Distance Education Centre (UWIDEC), St. Augustine campus, Trinidad and Tobago. She also functions as Curriculum Development Specialist. In the latter capacity she heads the course materials development unit within UWIDEC on this campus and works with academic staff to design and develop materials for delivery in the university's distance programme. Prior to her appointment within the Distance Education Centre, she served as educational technologist in the School of Education, St. Augustine, with special responsibility for co-ordinating the School's programme for the training of teachers and other related personnel in the development and production of instructional materials. Olabisi holds an M.A. in Educational Technology from Concordia University, Montreal and a Ph.D. from The Open University, UK.

**MARVIN LAMOUREUX** was a business administration college instructor in the United States and Canada. He completed his formal post-secondary career as Dean of Instruction at a Canadian community college, and since 1991 he has become involved in both TVET and higher education projects and activities in Canada and internationally. Dr. Lamoureux has worked on projects funded by the World Bank, Asian Development Bank, Canadian International Development Agency, United States Agency for International Development, and The Commonwealth of Learning as well as a host of private and public institutions including Deloitte and Touche Management Consultants (Kenya), SODETEG (France), TADS Education Ltd. (UK), Organisation for Educational Resources and Technology Training (USA) and KPMG/ARA Consulting Group, International Development Research Centre and Eduplus Management Group (Canada). He has had in-country project experience in 24 countries representing the Caribbean, Middle East, North America, East and Southern Africa, Central Europe and Asia. He has authored or co-authored over 80 technical reports and has delivered numerous workshops throughout the world.

**ARUN K. MISHRA** is a specialist in technical and vocational education with over 20 years' experience in planning and policy formulation in India. He was the founding Director of Pandit Sunderlal Sharma Central Institute of Vocational Education in India from 1993 to 1999. Before that, he was the Head of the Department of Vocationalization of Education of the National Council of Educational Research and Training, New Delhi, which was the precursor of the Central Institute. In these two positions he had an opportunity to contribute significantly to developing a system of vocational education in India inclusive of its philosophy and implementation strategy, course curricula and instructional materials. He also made an impact on the programmes of other organisations such as Indira Gandhi National Open University, National Open School and the University Grants Commission. Arun represented TVET in a number of delegations of the Government of India to different countries and brought the perspective of the developing world to the attention of international organisations such as UNESCO, the World Bank and The Commonwealth of Learning. He also directed a number of their workshops and activities. Arun also served as the Dean (Academic) of the National Council of Educational Research and Training for two terms. He has written extensively on various aspects of TVET both within the country and for UNESCO. In his personal capacity, Arun created two organisations, one working in a backward rural area of Bihar and the other, the Indian Society of Vocational Education, Bhopal.

**DERMOT MOORE** has 34 years of experience in education at all levels. He has held senior academic and management positions at the University of Fort Hare, the Technikon Witwatersrand and Technikon SA. Currently he is Vice-Principal: Planning and Development at Technikon SA. Based on an extensive interaction with the

international distance education community and a quest for a more equitable and efficient educational system for all South Africans, he has championed a flexible learning system as an alternative to current practices.

**NEVILLE WEAL** is currently the Manager of the Workplace Learning and Development Group at The Open Polytechnic of New Zealand. Neville joined the Polytechnic as a Horticultural Tutor in 1975, and he has carried out a number of different strategic and academic roles within the Polytechnic since then. His interests include how learning can be recognised wherever it occurs, and how formal and informal innovative learning activities can be used within distance and open learning frameworks.

# CHAPTER 1

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# ECONOMIC DEVELOPMENT AND SKILLS DEVELOPMENT

*Arun K. Mishra*

## IMPROVING PRODUCTIVITY THROUGH SKILLS DEVELOPMENT

Even a cursory gloss over the great human civilisations, such as the Egyptian, Greek, Indian and Chinese societies of the past, reveals that they were characterised by high skills and superior technological knowledge. These developed civilisations ensured well-being to their people through knowledge and skills pertinent to their times. Though not industrial civilisations, they did have vocational education and training systems, depending on their requirements of food, habitation and shelter.

In our own times we are still awed by the technological knowledge of these civilisations: their designs of the structures and their habitations, their architecture and engineering, their sewage and drainage systems and their metallurgical and other skills. These civilisations not only left their marks but are still studied and marvelled at. Any country today, if it aspires for economic and social development, must similarly be built on the foundations of knowledge and skills through a system of delivery to reach the masses as appropriate to the present times.

### The challenges of a complex society

Today, things are not so simple. Our civilisation has become extremely complex through a process of gradual evolution. Our present requirements are characterised by high technology on the one hand, and basic human survival on the other, depending on where we live. Accordingly, the needs for skills and knowledge as well as the modality of education and training may vary.

Yet society is moving in a direction that demands high levels of knowledge and skill in information and communication technology, biotechnology, global business and commercial practices, transport and conveyance, maintenance of law and order and various other aspects of day-to-day living. Our degrading environment, dwindling energy reserves, shortage of clean water and basic health needs are some of the other problems with tremendous implications on skills development. Further, rapidly growing

populations in many countries has increased not only the demand for resources but has caused other problems affecting quality of life such as finding germ-free water and food, adequate energy and power, clothing and shelter.

Setting priorities is not easy for many countries, but developing nations face a greater challenge. To them it is not a question of addressing one challenge over the other, but of tackling all problems at the same time. In other words, economic development is not only related to employment and training but also to development as a whole, inclusive of economic and social dimensions. Therefore, technical and vocational education and training (TVET) should include both social and productive skills. The list of different skills and knowledge areas needed is endless, but the point that highly skilled personnel are needed in the foundations of a developed society today cannot be missed. In our complex society the process of development involves all people, and all must be skilled and educated for this process.

## The role of urbanisation

Urbanisation is largely a phenomenon of the 20th century. Large urban conglomerations have developed all over the world and their future exponential expansion threatens the quality of life on earth. The urban lifestyle is a matter of grave concern in terms of supplies, sewage and garbage disposal, energetics, transport and environmental quality. Cities have not only been drawing the human population by migration from rural areas, but have also been sucking the precious life-supporting resources of the earth disproportionately to the land area they occupy. For example, cities occupy 2% of the earth's surface but consume 75% of its resources. The 21st century, by extrapolation, will see total urban breakdown unless all cities are planned and managed with ecological sensitivities along underlying principles of sustainability.

TVET has contributed to the development of urban civilisation and must now reorient itself to make our cities better habitat. Providing a comfortable life of better quality in rural areas is one possible solution, but it demands developing appropriate skills in all people.

Urbanisation and humanity's desire to exploit nature for its needs and comforts is also the cause of high consumption of resources. We have not yet woken up to the problems arising out of excessive consumption of resources and to the need for reversing the past developmental paradigm for greater sustainability. Once a new developmental paradigm is defined, it would become imperative to review our priorities and to make skills development comprehensive as well as visible, through a pervasiveness in our education and training systems.

## Skills for sustainable development in rural areas

Sustainable development essentially means establishing a pattern of development which conserves the natural resources of the earth for unlimited use by future generations, preventing environmental degradation and, to the extent possible, finding alternative sources of energy and materials.

Human activities today are consuming precious natural resources and degrading the environment on a scale never seen before. The very life support system on earth has been endangered. Rapidly increasing populations in many of the developing countries, and the western pattern of development they are emulating, have much to do with this

devastating trend. There are manifold manifestations of this problem, such as global climatic imbalances, depletion of biodiversity and forest cover, food and water shortages, and health-related problems to name a few.

It is not enough to understand the problem and apply long-term correctives. There are immediate implications on skills development, particularly in rural areas of developing countries. Training is needed now to address the issues of renewable energy generation, management of water both for healthful living and farming, sustainable agriculture, etc. For both economic and social development, immediate skills development is needed on a very large scale. What is required of the delivery method for such education and training is a vastly expanded system consisting of both formal and open learning, which would have to resort to distance learning modalities.

## The age of information technology

We are living in the exciting age of information technology (IT) which marks the post-agrarian and industrial phase of our civilisation. Even in existing agrarian economies of today, IT is being used increasingly, and there is an overwhelming desire to "jump on the IT bandwagon" to compete with the developed world. This change-over marks the increasing use of information in the production of goods and services as well as in day-to-day living. Information and the ability to process and use it are the keys to global power balance, economic or political. The extending frontiers, expanding capabilities and innovations in the application of information, lead us to an unforeseeable future — friendly or frightening but something to co-exist with. The implications for TVET in this scenario are enormous.

## The global marketplace

The growth of IT and related developments in the recent past have turned the world into a global marketplace. Gradually, national and regional economies are transforming into a single global economy. This economic interdependence means that in the future we will swim or sink together.

Globalisation has given birth to intense international competition to expand trade and commerce and a desire on the part of every country to capture as much of the global consumer market as possible. All this demands superior skills of production, distribution and communication as never seen before in the history of the human race. New skills are being demanded today, necessitated by competitive participation in the new economic world order.

## Open and distance learning

There has been a concurrent development in the field of education. The contact mode of instruction in the closed education system is no more the sole modality of learning. Open and distance learning (ODL) is well in place throughout the world and is fast gaining social acceptability.

Within the overall educational framework, the acquisition of marketable skills and competence for employability have come to assume a critical role in the technologically changing world. It is no longer enough to have traditionally literate (or illiterate) people earning their living from subsistence farming. What is needed is a large base of skilled

people capable not only of performing at a given time, but also of continually upgrading their capabilities to meet the changing demands of future. In many developing countries the process of development in the last half century has left a majority of illiterate, unskilled and uneducated people outside its fold. Any future development in these countries must aim to build a solid foundation of a technically skilled workforce.

If the developing countries want to enhance their international competitiveness for the well-being of their people, they must address the concern for TVET. The path to economic development and prosperity is through skills training, and ODL as the modality for TVET allows vast numbers of people, hitherto unreached, to take advantage of education and training opportunities.

## CONCEPTS OF ODL

According to a World Bank glossary of terms, distance education is defined as "teaching and learning in which learning normally occurs at a different place from teaching." Further, distance education courses are "structured programmes of instruction for a learner in a different place from a teacher, having learning objectives, one or more teachers, a medium of communication and subject matter." The distance education system has all the component processes that result in distance education, including learning, teaching, communication design and management.

But that definition leaves out open learning. With its roots in correspondence education, ODL is an evolving concept of recent origin. Its various ramifications and its true meaning should not be searched for in a dictionary. "Open" has to be understood against the backdrop of "closed" or "formal," and "distance" against the ideas of "contact" or "face to face." Essentially, ODL does not mean group learning that takes place under the supervision of a teacher in a formal classroom situation. In distance learning the learner and teacher are spatially and temporally separated, and the use of electronic media or educational technology is prevalent. Other characteristics are described in the following sections. (Note that while these are the commonly understood meanings and characteristics of ODL, the actual practice may follow quite diverse patterns depending on the institution. See chapters 6 and 7.)

### Flexible place and timetable

Unlike the formal or closed system, which is characterised by a fixed place and timetable of instruction and testing as well as predetermined entry or exit points, ODL embraces self-paced learning and flexibility in entry and exit as well as instruction and testing.

### Learner autonomy

ODL provides learner autonomy, which means flexibility in the time and place of learning, as well as in the speed or pacing of learning. Learners may be given a free option of courses within a given specialisation and also embrace choice in terms of technology. Learners may use print or electronic media that may include one or more of computer, TV, video, radio, telephone, e-mail and fax.

### *Educational technology*

Educational technology, so commonly used in both conventional learning and ODL, is of greater interest. If the teacher is physically absent, a substitute must be found for the powerful mode of personal communication — the human words, gesture, eye contact or body language. The choice of media provides an alternative, for better or worse. Many regard today's state-of-the-art technology as very efficient, while others hold that there can be no better substitute for the teacher. (See chapter 9.)

### *ODL institutions*

ODL may be available through an organisation exclusively created for the purpose, such as an open university or open school, or through a conventional organisation offering both ODL and formal courses. Within each type of organisation, ODL may be offered in a variety of patterns.

## ODL FOR INCREASING ACCESS TO TVET

There are many ways in which ODL can impact TVET. While on the one hand it can enhance the participation of young and fresh learners, on the other it opens a totally new frontier for workers aspiring to improve their vertical mobility both academically and professionally. The learning groups that have been brought under sharper focus through ODL are diverse, and without ODL they would have been otherwise disadvantaged. (See chapter 3 for more on this topic.)

### *Early school leavers*

There is an overwhelming number of children who, for a variety of reasons, never enter the school system or who drop out during the elementary cycle of education. To them the school curriculum is too theoretical or does not prepare them for life. These children generally enter the world of work ill-equipped and can earn only meagre wages. But if instead, along with theoretical instruction, practical marketable skills were taught to them, they might continue their studies in the hope of a better life.

### *Child labour*

Child labour in non-hazardous work situations is legally permissible in many developing countries or exists as an illegal reality because of poverty or other social needs. The malaise is often so deeply rooted that teaching of skills becomes inevitable. If these skills were taught, certified and accredited properly through a well-designed ODL programme, it would prove greatly beneficial to these children.

### *Difficult and remote locations*

Small or large clusters of habitations which formal schools often do not reach pose a challenge to the educational process. The facilities are poor, teachers absent and the skills of the modern world scarce. ODL techniques would be the most suited for learners in such places where TVET can reach most of these children who are socially and economically deprived. ODL would also benefit those children who find the school timing inconvenient and who would like to exercise some freedom and autonomy.

With ODL they can study at their own pace and complete a programme stretching the usual time boundary.

### Girls and women

Girls and women are generally characterised by poor participation in TVET, and changing that often proves to be a challenge. Girls and women make up nearly half the population, and a majority of them stay home where there is enormous scope for their profound social roles and economic productivity. Such a vast human resource can more efficiently be tapped through ODL, with the result, in some countries, of girls and women being the prime movers of development by virtue of their improved insight into social and economic aspects. ODL-TVET has the greatest potential in this respect.

### Employed workers

ODL is of much advantage to employed workers who wish to enhance their educational or professional equipment, but who are not in a position to attend school full-time within the given rigid framework. It suits such students because they can enrol part-time and complete the requirements in a more flexible situation. They can also work on part of a given programme on a course-to-course basis for which they may not attend classes. They can learn while working without any loss of time.

### Other learners

Besides those learners described above, other groups can benefit from ODL. ODL can be a better modality of skills development for people with disabilities, migrants or anyone who needs to study at an individual pace.

## NATIONAL POLICIES AND ODL

Almost all countries have laid down policy postulates concerning ODL articulated in one form or another. There are certain common features in all of them which relate to one or more of these issues:

- Financing
- Regional and socio-economic disparities
- Provision by private or public providers
- Separate institutional framework versus integrated educational system
- Certification and accreditation
- Promoting and providing technologies for ODL
- Co-ordination between media and educational sectors

The following sections provide a general presentation of some of these policy parameters which may have bearing on ODL.

### Financing

The political commitment to and national policy on ODL must be reflected through liberal financing. The basic question in financing relates to the competition between

traditional learning and ODL on the one hand, and general education versus TVET on the other. ODL is still a new idea in the educational arena and many national governments would like to be convinced of the pay-off that might accrue in the long- and short-term.

The traditional school and university systems are much too well anchored with often strong lobbies that would resist any reduction in their share of available resources. The same thing is true for general education as opposed to TVET. These aspects impact the support behind TVET through ODL, particularly in developing countries. However, in view of the growing international significance of both ODL and TVET, and because internationalisation of ODL is an inevitable trend and almost all developing countries would like to achieve national development at a rapid pace, the scale tends to tilt towards ODL. The international donor agencies and promoters of educational development continue to enhance significantly the national policy support to ODL.

## Private and public delivery

In most developing countries ODL is seen as being of special benefit to the "left out" and deprived learners. As these groups are unable to meet the high cost of private institutions, the national governments take upon themselves the role of TVET provider. Yet the demand in certain trades is so overwhelming that private providers readily jump into the fray with the desire to "make hay while the sun shines." These providers are often regulated by the state and sometimes by international institutions, which gives their graduates an opening into the international job market.

## Certification and accreditation

Very often the private TVET institutions delivering their programmes have their own system of student certification. At the same time the countries put in place their own public system of recognition and accreditation. However, the public system is characterised by some mode of centralised evaluation and certification. Their degrees are automatically accredited for jobs in both private and public sectors. From the point of view of quality, the private providers generally perform better and have a higher rating. The policy question, therefore, is how to maintain the comparability of quality and how to have a system of certification and accreditation that is internationally acceptable. (See chapter 10.)

## ODL technologies and media

ODL cannot be provided without resorting to advanced and appropriate technologies. Co-ordination has to be established between more traditional media sectors like TV and radio on the one hand, and newer information and communication technologies (ICTs), such as e-mail, telephone and fax, on the other. Because ODL is inter-sectoral in nature, national policy support is inevitable and impacts teaching/learning through the ODL system.

## Workplace collaboration

TVET through ODL requires more than instructors at a distance. For certain components of the programme, learner support has to be through physical contact, either in classrooms at a distance or on workplace sites of production of goods or services.

This requirement, also being inter-sectoral, has to be achieved through policy directives laid down either nationally or locally.

## *Legislative issues*

National policies, being the statement of intent, often have to be enacted in the form of legislation. This is the exclusive domain of the government.

## CONCLUSION

Over the past 25 years or so, ODL has been driven mostly by learners' needs and the diversification of media used in instruction. Many of the educational technologies, such as e-mail, fax, video and audio-video conferencing, have arrived on the scene during this period. The same period has also witnessed the phenomenon of mass participation of diverse groups in the educational process. The diversifying clientele has brought the educational planners to defining and formulating a variety of curricula to meet its needs. The accent on TVET delivered through ODL, as opposed to the conventional programmes in the formal education system, has emerged as a direct consequence.

A new paradigm of sustainable development where the natural resources are judiciously consumed; energy, water and productivity of the land conserved; and the overall ecology respected is seen to change the content of TVET in both developed and developing countries in the future. The other notable changes in the field of information technology as well as globalisation of economy have had a great impact on TVET. The international and national policy support for TVET through ODL has been forthcoming in ample measure, and the future expansion as well as qualitative changes in this area are going to be further demand-driven.

# CHAPTER 2

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# THE KEY PLAYERS

*Judith Calder*

## INTRODUCTION

Governments increasingly see education and, in particular, technical and vocational education and training (TVET) as having a key role to play in the economic success and social stability of a country. Corporate bodies, as consumers of skilled workers, are loud in articulating their need for trained staff as they search for new markets and increasing productivity. Individuals are becoming aware of the potential of TVET to improve their employment prospects and their future income. Against this growing perception of the importance of TVET by potential buyers and users, an increasing range of these agencies and decision-makers see open and distance education (ODL) as a realistic way of extending TVET to a much wider public.

At the same time, the outstanding business potential of education and training through ODL means it is now well recognised. For example, in April 2001, the investment bank Merrill Lynch estimated the global e-learning market as being currently worth US$3.5 billion, growing to US$25 billion by 2003 (Teather and Cassy, 2001), while the global market for educational materials is even larger. Entrepreneurial interest from every conceivable type of organisation and agency is flourishing. Global telecommunications and Internet/technology companies, education and training publishers and providers, service providers, national and supranational government agencies are all investing in this new industry. Household names such as AOL Time Warner, Cable & Wireless, Microsoft, British Telecom, AT&C and the European Commission are all increasing their stake in this market.

## WHO THE STAKEHOLDERS ARE

Stakeholders are members of those groups with an interest in a particular activity, at any stage. Thus the interest may be associated with the design, development, production, marketing, distribution or utilisation stages of the process. The interests may also be primarily financial, political, social, developmental or community. The number and range of groups with an interest in the different stages of open and distance approaches to TVET is immense, and each of these stakeholder groups will have a different type of interest. Consumers will have different needs and aims and providers will see different opportunities in the development and provision of TVET through ODL.

Two key features which are important in determining the nature of the interest of stakeholder groups are the sector to which they belong (public, non-profit/non-governmental organisations or private/corporate) and the geographical reach of their interest (local, state-wide, national or international). Table 2.1 gives examples of the different types of stakeholders.

*Table 2.1: Examples of stakeholders in TVET using distance education, by sector and geographical reach*

| SECTOR / GEOGRAPHICAL REACH | PUBLIC | NON-PROFIT/ NON-GOVERNMENTAL ORGANISATIONS | PRIVATE/CORPORATE |
|---|---|---|---|
| INTERNATIONAL | World Bank<br>UNESCO<br>European Parliament | COL<br>ICDE<br>WorldSpace Foundation<br>International Extension College | AT&T<br>British Telecom<br>Cable & Wireless<br>BBC World<br>Microsoft |
| NATIONAL | Government departments | SchoolNet (India),<br>National Extension College (UK) | Unext (USA)<br>IBM Canada |
| STATE/REGIONAL | State Open Universities (e.g., PR China, India) | State Resource Centres for Adult Education (India)<br>Scottish University for Industry (SUfI) | Small enterprises providing training<br>Places of employment |
| LOCAL | Local schools and training centres | Women's groups<br>Local credit unions | Small enterprises providing training<br>Places of employment |
| INDIVIDUALS | Agricultural workers<br>Unemployed<br>Refugees<br>AIDS victims | Volunteer members | Employees |

The reality, however, is somewhat more complex than Table 2.1. might suggest. For example, many international and national bodies work at state and local levels, and an increasing number of others are starting to recognise the benefits of doing so. Similarly, local groups and state-level organisations may be recognised and have a voice at the national level.

At the same time, the apparently clear distinction between public, private and non-profit sectors is, in reality, also blurred at the institutional level. The financial pressures on public institutions such as universities and charities has led to many of them setting up

departments or units which undertake "for profit" activities. For example, in India, State Resource Centres provide technical resource support to adult literacy programmes. They were set up and are financed by the Ministry of Human Resource Development, Government of India, but also raise both project-specific funds from other agencies and their own additional funds from the sales of publications and from consultancy work for other organisations. In Argentina, Educ.ar SE, a non-profit organisation founded by the Argentinean government, is designed to connect all educational institutions in Argentina via the World Wide Web, and to train every teacher in the use of new learning technologies. It is now considering the creation of a new company, Educ.ar SA, to manage its commercial activities such as selling content, connectivity and consulting services (Stokes, 2001).

Another example of an organisation undertaking cross-sectoral activities was illustrated in the announcement by the president of MIT in April 2001 that course materials would be made freely available on the Internet over the next 10 years. He made a number of statements about the aims of the programme (known as MIT OpenCourseWare), referring to MIT's educational mission, to the idealism of its staff, to openness and outreach and to the desire to influence the world. In the same statement, however, he referred to his belief that revenue-generating distance education had a role in the world, for example for professionals learning about new developments in their field, and of the likelihood of MIT's future activity in this sector (*MIT News*, 2001). This illustration is typical of the complex and often apparently contradictory nature of aims even within the same institution.

Conversely, an increasing number of private sector organisations include some "non-profit" activities, often as part of a stakeholder alliance with a local community or a trade union. For example, the form of Coca-Cola's planned worldwide Coca-Cola/Harry Potter literacy programmes are to be left to Coca-Cola local companies in order to reflect variations in cultural tastes (*Guardian Education*, 2001). A rather different example is the non-profit national UK newspaper *The Guardian*, which now regularly publishes copyright-free learning resources in print through pages in the newspaper, on CD-ROMs and on its Web site.

Within the same organisation then, different areas of activity will often operate in different sectors. Thus while an organisation may at the corporate level appear to belong to a particular sector, at the activity level the picture is likely to be more complex, with cross-sector activity likely taking place. In effect, it is not the sector to which the organisation appears to belong, but the sector to which the *activity* belongs which is key.

## TRAINING MODELS

The standard model of distance education is one in which the providing institution first develops the course materials and then delivers the course to the learners. The early distance education institutions — the first- and second-generation distance education colleges and universities — developed their own courses and delivered them directly to learners. With the increasing use of open and distance methods for TVET however, the situation has become more complicated.

The original model assumed a traditional relationship between the education and training provider and the learner. The learner registered with the provider and paid fees for the tuition. However, the appearance of intermediaries, such as employers, in the teaching-learning process has led to a growth in the split between the materials

development function of ODL and the course delivery function, with the intermediaries buying one function and, for example, providing the other themselves. Government bodies also saw distance teaching as a cheaper and more flexible method of providing education and training in shortage subjects. Thus in the UK, and subsequently in the rest of Europe, government provided grants to a variety of agencies to encourage the development of distance education and training materials separately from course delivery. New forms of course delivery were similarly encouraged.

However to provide good quality distance education and training, a provider needs:

- Content expertise
- Distance teaching expertise
- Realistic levels of finance to cover development and production costs
- Time for the materials development and production process
- A support/course delivery infrastructure

Where some or all of these are not available, then ways around the problem have to be found. The lists below show the options available to providers of TVET using ODL approaches.

1. Materials development and production

- Develop own (requires content and distance teaching expertise plus finance)
- Commission from elsewhere (requires reasonable level of finance plus knowledge of reliable organisations)
- Buy "off the shelf" (requires knowledge of availability and quality)
- Modify existing materials (requires knowledge of content and distance teaching expertise, plus agreement of copyright holder)

2. Course delivery

- Use own delivery system (requires expert supervision and monitoring to maintain quality plus sufficient learners to justify expense)
- Commission another agency to deliver course (requires knowledge of good quality agencies offering expert supervision and monitoring to maintain quality plus finance)
- Buy into existing course delivery system (may not cover appropriate geographical areas)
- Buy into modified course delivery system (requires clearly negotiated agreement with another agency)

Although there are many possible combinations in the lists above, certain combinations or training models do tend to be particularly popular, and these are discussed below. The advantages and disadvantages of each model vary depending on the circumstances of the providers and the consumers of the training opportunity.

### *Learning materials and course delivery bought from the same provider*

A client buying from a provider who both develops its own material and delivers its own courses is probably still the most common training model. A typical example of such a provider is the National Open School in India (NOS).

NOS targets poor school-age children in rural and isolated areas, especially those who are already at work (Singh and Dipak De, 1999). Its enrolment is of the order of 130,000 students. Although its main aim is to provide opportunities for continuing and developmental education at the school stage, it also has about 6000 students enrolled solely for its wide range of vocational education courses, with approximately another 26,000 who are studying both academic and vocational subjects. These courses include subjects such as word processing, jute production technology, carpentry, solar energy technician, laundry services, furniture and cabinet making. The NOS supports learners through a network of study centres. Materials are primarily print-based, although an increasing use is being made of ICT and audiovisual media.

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**National Open School, India: Distance Agriculture Education**

The Indian Council of Agricultural Research (ICAR), has a network of 281 agricultural centres — the Krishi Vigyan Kendra (KVK). These are grass-level institutions "devoted to extension education programmes including vocational education." Training is primarily through work experience, and there is no certification offered on completion of training. Singh and Dipak De suggest that best estimates of throughput indicated that distance education was the only feasible route to reach the optimum number of rural workers within a realistic timespan. The NOS has established a number of certificate study programmes in agriculture using the KVK centres as study centres, together with multiple media such as print, audiovisual material, teleconferencing and counselling. Courses include subjects such as plant protection, water management for crop production, oyster mushroom production, poultry farming and the like. Over 2500 rural youth were reached over a five-year period (Singh and Dipak De, 1999).

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The advantages of this model are that buyers can see the courses they are buying, the courses already exist and only the costs for individual learners have to be paid. The model also allows learners to study for a recognised qualification.

The disadvantages are that the courses available may not cover the training topics needed; they may not be available to learners in certain areas; they may not be of the right level, in the right language or of the duration and intensity wanted; and it may be expensive if the buyer is funding more than a few learners.

### *Providing organisation commissions an external agency to develop and deliver materials*

A training model which is increasing in popularity involves the providing organisation — usually an employer — commissioning an external agency both to develop and to deliver a tailor-made course for its employees. One example is The Commonwealth of Learning (COL) course for UNHCR. This course, Writing Effectively for UNHCR, has been designed specifically to meet the needs of UNHCR staff. The delivery mode for

this training programme is a hybrid one designed to cope with the geographical spread of UNHCR staff and take advantage of their global e-mail connectivity. The study package is print-based and student support is provided via e-mail. Tutor support, assignment submissions and marking, student feedback and linkage with course administration are all computer-mediated. COL delivers the course from Vancouver by hiring local, qualified tutors. Tutor training is provided via videoconferencing with a trainer based in Canberra, Australia (Bentley, 2000).

A similar example involves the on-line training of staff with another global company, Microsoft. LaSalle University, based in Louisiana, USA, offers an online course in conjunction with Microsoft. The course allows Microsoft employees to upgrade their computer skills while working full-time anywhere in the world. They can also obtain course credits towards certificates in technical education to enhance opportunities for promotion (Farr, 1999).

The commissioning by global companies of training materials and the delivery of the training by a specialist organisation allows the company to achieve not only a tailor-made course, but a uniform standard of training for staff, regardless of their location. The advantage of this model is that buyers can specify precisely what they want in terms of content, level, language of instruction and duration. Thus it should meet buyers' training needs and avoid many of the disadvantages of the course bought "off the shelf." Also, the more learners there are, the more cost-efficient the model should be. At the same time, the infrastructure can be developed to include all the learners whom the buyer wants included. However, having a distance-taught course tailor-made to meet specific needs is expensive, at least in initial development and production costs. It also takes time to design and develop.

### *Providing organisation commissions an external agency to develop contents but delivers the course itself*

While many distance teaching institutions use external consultants as content experts, some can also develop courses in partnership with centres of excellence that provide the highest-quality content. Take the case of Unext, an online business school backed by US business interests. Unext has used its own expertise in a particular delivery medium, but has drawn on the content expertise of other internationally recognised institutions, such as Columbia University, the London School of Economics and Stanford University, to produce its own online training course (Vekar, 1999).

The advantages of this model are that the provider can offer a wider and possibly more coherent range of courses without needing to recruit new staff with the appropriate content expertise. The reputation of the collaborating institution can be used to guarantee the quality of the content. This model also enables the provider to use the existing infrastructure more efficiently.

The disadvantages are that such types of collaboration can be difficult to administer and that the external content experts may not appreciate the need to work closely with materials designers in order to optimise the ways in which the teaching and the delivery media can be used.

## *Providers buy "off-the-shelf" courses and deliver them*

A model with good prospects of success is the one where the provider buys an "off-the-shelf" course and provides the course delivery system for the learners. While the initial materials developer still risks the possibility of poor sales of the materials, the course provider, the learner and the employers have the benefit of a training model which is more likely to be successful, at less cost, and with more time flexibility than a traditional face-to-face course. A major advantage of this model is that a conventional training institution can offer specialist courses through the use of bought-in materials, using their own experienced tutoring staff to support the learners. This model is particularly appropriate for courses which lead to national qualifications and which need to cover a standard curriculum. However, from an employer's perspective, such courses do run the risk of containing redundant material, or of excluding material which would be useful in the particular context in which the employer operates.

An example of this model is offered by the Hull College of Further Education in the UK. It offers a distance education training course in process plant operations. This three-year course is provided by the College for the employees of the local BP Chemical Processing Plant. The course is print-based, with a weekly supervision period provided onsite by college tutors. During this four-hour period, students may discuss study problems, paperwork for exam entry and hand over assignments to their tutors. Students are expected to study in their own time. The materials were developed by Cleveland Open Learning Unit and bought through the Open College (the successor to the Open Tech) (Calder et al., 1995).

The course delivery is very much a partnership between the College and the employers of the trainees. The course providers feel that the biggest challenge to the students in studying through open learning is self-discipline. They have, therefore, devised a tight system of support and monitoring of progress with clear deadlines and with the employer playing an active role in the process.

## *"Off-the-shelf" packages bought from either the producer or a supplier*

Many open and distance training courses consist simply of making learning materials packages available to learners. These packages normally comprise components such as print, video, audio, and/or CD-ROMs. Many employers hold a small stock of such packages and assume that they are providing training by doing so. Even education and training institutions may hold a similar stock for their "distance learning" students.

During the mid-eighties, the British government tried to encourage new forms of technical education and training in the UK through the use of open and distance methods. The Open Tech Programme was a five-year initiative which was exhaustively monitored and evaluated throughout. Although many organisations with content expertise initially developed materials with the intention of selling them to other bodies who would be responsible for their delivery, they frequently had no clear idea of what the market for the new materials was likely to be. It became clear that the materials being produced frequently did not match what was wanted by the education and training consumers. Subsequently there was a change of emphasis towards delivery projects in order to achieve greater diffusion of the materials (Brown, 1987).

## STAKEHOLDER ROLES

In addition to the roles played by materials developers, course deliverers, buyers and learners in TVET through open and distance learning, there are many other roles which can be identified:

- Provision of funding
- Policy-setting
- Strategic decision-making
- Regulatory — setting standards
- Monitoring and evaluation — maintaining and improving quality
- Provision of information/advice/guidance
- Mediation/facilitation
- Gatekeeping — controlling access to certain groups/networks
- Creating demand — PR, marketing, environment changing (perceptions of feasibility, success, relevance)
- Articulation of needs — employers' needs/learners' needs
- Provision of expertise
- Producer of learning/training materials
- Supply of services, equipment
- Consumer of services/materials/trainees

An example from Sri Lanka illustrates the diversity of the roles undertaken by different groups who can become involved in a new TVET development which involves an open and distance approach. Laboratory technicians there are employed in universities, schools, research institutes, analytical laboratories and production industries. These technicians had little if any practical work experience during their secondary education and, hence, had no theoretical or practical knowledge in laboratory practices, management and safety, in handling and maintaining instruments or in common laboratory techniques (Fernando, 1999). Neither was there any post-school training course for laboratory technicians in Sri Lanka. Although a specialised curriculum had been drawn up and agreed to by a committee of experts, supported by the University Grants Committee, attempts to introduce a laboratory technicians programme had failed as no Sri Lankan institution was willing to take on the task.

It was against this background that a regional five-day workshop was organised by The Commonwealth of Learning at Indira Ghandi National Open University (IGNOU) for South Asian Commonwealth Open Universities, sponsored by the Commonwealth Secretariat. COL had acquired the copyright to distance study material produced by Scitech Educational, a private company in the UK. Working groups of delegates developed an appropriate mechanism for the successful delivery of the material within the local context. The curriculum was found by the Sri Lankan delegates to be very similar to that already recommended for adoption within the Sri Lankan university system. The outcome was that, on their return, the Sri Lankan delegates to the workshop persuaded colleagues in the Natural Sciences Faculty of the Open University of Sri Lanka to pursue the initiative and offer the programme as early as possible.

**Advanced Certificate Programme in Laboratory Technology, Open University of Sri Lanka (OUSL)**

This is a one-year programme to train students in the operation and maintenance of scientific apparatus and instruments and to prepare them as "able personnel" in the functioning of laboratories. Delivery is through print material, day schools and a practical component lasting 40 days. Student progress is continuously monitored through assignments in theory and through practicals which together contribute 30% to the final result. Three passes at GCE Advanced level are required for entry, or equivalent passes in Foundation Courses offered by the OUSL. The course is an adapted version of distance study material produced by Scitech Educational, a private company in the UK (Fernando, 1999).

In this example, there were a number of different stakeholders who were involved at different stages and in different ways in bringing this training programme to fruition:

- The UGC for Sri Lanka
- Sri Lankan universities
- "Experts"
- The Commonwealth of Learning
- IGNOU
- Members of other South Asian universities
- The Commonwealth Secretariat
- Scitech Educational
- The target group of trainees — those employed in laboratories

The need for training had already been recognised by employers in both the public and private sectors. The Sri Lankan UGC, Sri Lankan universities and "experts" were involved in agreeing on the curriculum. The Commonwealth of Learning, IGNOU, members of other South Asian universities and the Commonwealth Secretariat were involved in the workshop, while Scitech Educational, a private UK company, was the source of the study materials prior to modification. Also of note in this example are the different types of contributions made by each stakeholder group. Different stakeholders were concerned with:

- The articulation of the need for certain standards of knowledge and skills among the target group of workers
- The negotiation and agreement of a policy on the content of any training
- Information about and access to appropriate materials for adaptation
- The facilitation of the process of course development and provision
- The provision of sufficient resources to enable the training programme to be implemented

Examples of other types of TVET using open and distance methods reveal a similar picture of multiple stakeholders with different roles and degrees of involvement. In Zimbabwe, agriculture has been the most successful and dominant economic sector.

Creed (1999) reports that Agricultural Extension Officers (AEOs) operate as outreach workers, focusing on the small-holder sector, visiting farmers and setting up rural training programmes on different aspects of agriculture, shows, women's savings clubs and diagnostic surveys. While there is an emphasis on qualifications, there are few opportunities nationally for further professional development. AEOs tend to be non-graduates who took a one-year Diploma in Agriculture from Chibero Agricultural College in Zimbabwe. Selected students are funded by their employer, Agritex (Department of Agricultural Technical and Extension Services), to study the post-graduate diploma course in Agricultural Development from Wye College, London University, as part of a compulsory, rolling in-service human resource development programme. This programme is itself funded by donors such as NORAID and the Rockefeller Foundation.

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**Post-graduate diploma course in Agricultural Development offered by Wye College**

This course was the first distance education course taught in the University of London's External Programme. It is produced, managed, examined and largely tutored in the UK. Modular one-off options are available in specialist areas of choice (e.g., Livestock Development). A high level of English language ability in reading, writing and study skills is required. Wye is part of the University of London and is a centre of excellence in agriculture, horticulture, agricultural economics and the rural environment. The External Programme of the College targets learners from developing countries, has an established rolling programme and is also committed to increasing wherever possible the participation of women in their programme. Assessment is entirely on end-of-course exam results although there are non-compulsory TMAs (Creed, 1999).

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The stakeholders in this example comprise:

- Agritex (Department of Agricultural Technical and Extension Services)
- NORAID and the Rockefeller Foundation
- The University of Zimbabwe
- The Agricultural College in Harare
- Wye College
- The AEOs
- The small farmers and others who are clients of the AEOs

Again, each stakeholder is involved with the training opportunity in a different way. Agritex, the employer, is not only aware of the need of its middle management staff for professional development, but has taken steps to ensure that the need is met in a way which enables staff to carry on working and to continue with their studies regardless of their geographical location. The quality of their training is ensured through the use of a distance-taught course offered by a college which is a centre of excellence in agriculture, horticulture, agricultural economics and the rural environment. NORAID and the Rockefeller Foundation are involved through their support of the aims of the Agritex programme in the form of financial aid. The University of Zimbabwe is an active participant in the delivery of part of the training through its communication skills unit, while the Agricultural College in Harare is also a partner through its organisation and hosting of the residential component. Wye College has designed, produced and delivered the course materials and the student assessment component. The AEOs themselves are not only the learners and the recipients of this training, but they also provide support for each other. They also use the knowledge they have gained from the course in their contact with their clients. This last group, the small farmers and others who are clients of the AEOs, are the key beneficiaries of the training programme. Other beneficiaries are the citizens who benefit from the increased prosperity which a more effective agricultural sector brings.

## DISCUSSION

The range of aims and interests of the different groups of stakeholders in TVET using open and distance learning inevitably means that some will be in conflict some of the time. A major and obvious area of conflict is the degree of financial risk which groups are willing to take in relation to education and training activities. Activities which are funded with public money cannot operate with the same level of risk as those which are privately financed. This does not mean that there are no publicly financed innovations — far from it. But the source of financing does restrict the speed and scale with which an activity can be introduced. The payback for risk-taking is, of course, the level of profit. Thus the prices for innovative or specialist privately financed activities will be considerably higher than for those activities which are publicly financed or which do not seek to make a profit.

The balance, or frequently the imbalance, between public, non-profit and for-profit activities has associated effects on the quality of those activities and on their inclusiveness. In highly competitive situations such as in the provision of management training through ODL, an early casualty is quality. The rush to capture new markets by new and inexperienced providers can result in expensive and disappointing mistakes. At the same time, stakeholders with little money, for example in the developing countries, can be dismissed by for-profit providers as being of little interest. While the education and training needs may be both recognised and articulated, those needs will only be met by low-cost solutions. These will be either self-generated or be in association with stakeholders undertaking non-profit of publicly funded activities.

The value of collaboration in open and distance education and training has long been recognised by practitioners in the field. The examples in this chapter give a flavour of what can be achieved by different stakeholder groups coming together with a common purpose. However, successful collaboration is not an easy option, and institutions with big egos can find it just as difficult as individuals to put the achievement of a common aim ahead of personal achievement. Successful and unsuccessful examples of collaboration need further investigation to identify the key conditions needed for

successful collaboration. In the meantime, clarity of aims, honesty of purpose and inclusion of key stakeholders will increase the likelihood of the development of successful models of vocational education and training using open and distance learning techniques.

## REFERENCES

Brown, H. *Open Learning Developments and the Open Tech Programme in Further Education*. London: Tavistock Institute of Human Relations, 1987.

Bentley, M. and D. Murphy. *A Course on Writing Effectively for UNHCR*. Vancouver: UNHCR/The Commonwealth of Learning, 2000.

Calder, J., A. McCollum, A. Morgan, and M. Thorpe. *Learning Effectiveness of Open and Flexible Learning in Vocational Education*. Sheffield, UK: DfEE Research Series No. 58, 1995.

Creed, C. *Towards a Framework for Addressing Diverse Learners in International, English-medium, Print-centred DE: A Zimbabwean Case Study*. Unpublished doctoral thesis. Milton Keynes, England: Open University, 1999.

Fernando, J.N. Oleap. "Commonwealth of Learning Initiative to Empower Middle Level Personnel Through Distance Education: An Advanced Certificate Programme in Laboratory Technology at the Open University of Sri Lanka." Paper presented at the Pan Commonwealth Forum on Open Learning: Empowerment through Knowledge and Technology, Bandar Seri Begawan, Brunei Darussalam, 1999.

Farr, M. "Non-traditional education and delivery." *Distance and Supported Open Learning*. London: Hobsons and The Open University, 1999.

*Guardian Education*. "Coca-Cola is it. And so is Harry Potter." March 13, 2001.

"MIT to Make Nearly All Course Materials Available Free on the World Wide Web." *MIT News*, April 4 2001.

Singh, R.S.P. and Dipak De. "Open Learning for Empowering Rural Youth through Agricultural Technology." Paper presented at the Pan Commonwealth Forum on Open Learning: Empowerment through Knowledge and Technology, Bandar Seri Begawan, Brunei Darussalam, 1999.

Stokes P. "Educ.ar Brings ASP Solutions to International Markets." *Eduventures.com* 10 (2001). <*www.eduventures.com*>

Teather, D. and J. Cassy. "How to Learn the Hardware Way." *The Guardian*, March 15, 2001.

Vekar, J. "On-line Education: A New Arena for International Co-operation." *Distance and Supported Open Learning*. London: Hobsons and The Open University, 1999.

# CHAPTER 3

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# THE POTENTIAL LEARNERS

*Magnus John*

## INTRODUCTION

When we talk about "potential learners," it is unhelpful to dissociate them from their environment, more so because the economic well-being of the respective countries in which they live vary. Also, existing national educational provision and economic and social services are essential contributory factors worthy of consideration. More relevant, perhaps, is that the dictates of the national job market should serve as an indicator for the skills needed for sustenance and potential national economic development. Ignoring all these attendant influences in national development where diverse economic backgrounds dictate their respective national policies would only result in an incomplete picture of the status quo.

Therefore, a chapter devoted to a study of potential learners using the open and distance learning (ODL) mode for technical and vocational education and training (TVET) programme/qualifications cannot be considered in isolation from the countries from which the ODL institutions operate or, indeed, from the kinds of programmes they offer. The increasing interest in globalisation of education might change the direction of national policies, especially within the economically disadvantaged countries, but there is evidence to suggest that ODL practitioners in some of these countries are as attuned to concerns of access and quality as are practitioners in the North. For example, refinement of ODL provision in the Commonwealth has not been exclusive to the economically developed countries (Nanda, 2000; Numan and Alagmir, 2000; Reddi, 2000; Smith, 2000). Issues of quality, access and variety are much in evidence among concerns of ODL institutions and practitioners in Asia, where enforcement of standards of quality is embedded in the national policies of some countries and where economies of scale are much more successfully realised than in sub-Saharan Africa and the many small states in the Commonwealth (Mills and Tait, 2000; Reddi, 2000).

Much of the analysis here of the issues regarding potential learners using ODL for TVET programmes concentrates, therefore, on developments within the Commonwealth. This group of nations reflects a microcosm of the rest of the world in terms of cultural and socio-economic mix, and so conclusions reached will have relevance beyond geographical boundaries. Given also that the majority of the countries in the Commonwealth are economically disadvantaged, the laissez-faire approach that dominates choice exercised by potential learners in economically advantaged countries

does not exist in the rest of the Commonwealth or in those countries with a similar economic background. Here, choice is not only restricted to those who can afford to pay. Some of the TVET programmes offered are directed and driven more by design for the benefit of targeted groups or communities than for individuals. Planned training provided in this way makes specific impact on the economic welfare of those targeted audiences, whether community groups or special workers. As planned development programmes, they often have their basis in health or agriculture and their impact offer some measure of sustainability where none existed previously. Within the context of TVET programmes for potential learners, however, a much wider range of skills training is not only expected but is also inevitable. This will not preclude more of them continuing to be planned programmes as some of them have been in the past.

## LOCATING TVET PROGRAMMES IN ODL

Considering the impact of TVET cadre of staff anywhere as the lifeblood of service of the nation, their value to their respective nation's economic well-being must be regarded as no less than its mainstay for wealth creation and accumulation. Within this context, potential learners who would benefit from TVET programmes offered through ODL cut across a wide range of educational, social and economic levels. One of the largest target groups, particularly within the developing world, is that of illiterate people. With 72% of all the illiterate people in the world living in nine high-population countries (Visser, 1994), any planned ODL programmes for potential learners realising a measure of success in those specific countries alone would have a substantial impact on their economies.

Also worth mentioning is that teenagers will comprise the single largest group in the world in the next 20 years. In the developing South, this has already been realised and the level of unemployment among the young is very high. Implementing TVET programmes through ODL will not only transform the economic power of the beneficiaries, the weak economies of the South will improve considerably. Indeed, TVET programmes offer better opportunities for skills training where beneficiaries could become self-employed or established in family enterprises. Given the claim that half of the world's employed labour force is in that category (Bartram, 2000), the long-term implication is that training offered in a variety of locally targeted but employable job possibilities could equip a large proportion of illiterate and unskilled people with employable skills.

There is ample evidence supporting the potential of ODL delivery systems as being appropriate for equipping illiterates with skills (John, 1996a; Kinyanjui, 1995; Perraton, 1993). The examples highlighted later in this chapter elucidate the spread and impact. Suffice it to say at this stage that groups of illiterate and literate beneficiaries (both men and women) have acquired skills in areas such as basic agriculture and animal husbandry, thereby transforming lives of social and economic vulnerability to economic empowerment. The same mode has been applied to impart skills training in carpentry, artisanry and building technology among displaced peoples returning to Namibia (Dodds, 1994).

TVET programmes offered through ODL need not apply to just those examples mentioned. TVET also responds readily to the introduction of the Internet for more sophisticated ODL approaches to learning, which reflects the other end of the spectrum where course designers develop and modify teaching strategies for a better student-centred approach with greater beneficial consequences (Mills and Tait, 2000). The

replication in several African countries of the INADES (L'Institut Africain pour le Developpement Economique et Social) programme in agriculture and that of AMREF (African Medical and Research Foundation) in primary health care is a testimony of their quality and effectiveness. Other potential learners in a wide variety of contexts could witness the transformation to financial security in their future. These include women marginalised through cultural practices (Dodds and Mayo, 1992), refugees displaced by political instability at home (Inquai, 1993) or nationals living in small states where access to educational opportunities are restricted.

All of the above ODL examples have their existence and implementation practices rooted in national or institutional policies. Potential learners could therefore be better provided for where education policies, either at national or regional levels, endeavour to implement TVET programmes using ODL as part of the general education provision. The success of national ODL policies is well established in countries in the South, such as India, Hong Kong, Tanzania, Zimbabwe, Namibia and South Africa. National policies also have the potential of even greater impact where regional groupings are in place, thereby avoiding the potential threat of globalisation. Thus, the implication for potential learners working in an environment of regional economic co-operation to address the requirement for their respective TVET programmes through ODL have far-reaching consequences for successful outcomes.

## RATIONALISING THE DELIVERY OF TVET THROUGH ODL

The effectiveness of the ODL delivery mechanisms has been very well rehearsed. The so-called three generations of ODL practice are still in use, each considered appropriate and effective in their respective contexts. The question, therefore, of utilising an appropriate ODL delivery method for potential learners offering TVET programmes depends largely on other factors, such as the institution hosting the delivery of the programme, resources available and infrastructure requirements. Given the socio-economic structures of countries in the Commonwealth, even those in the South may require differing delivery methods for TVET programmes. Where national or regional arrangements are adopted, articulating the issues beyond the confines of the institution responsible would bring out the merits or otherwise of one method as against another.

UNESCO has, on several occasions, initiated moves to mobilise developing countries and spearhead discussions about ODL delivery mechanisms on a co-operative basis (Visser, 1994). The idea of establishing multi-channel distance learning centres within Africa for use by ODL practitioners in the continent was mooted in 1995 — an ideal concept that might have resulted in the development of TVET programmes for all sub-Saharan Africa. In spite of its relevance for this purpose, the pace and widespread use of ICT in ODL practice provides another dimension to the delivery of TVET programmes for potential learners. There are many advantages to the idea of a network situation where programmes could be accessed by potential learners in several countries.

The increasing spread of globalisation of ODL offers the idea of lifelong learning a lifeline across national boundaries, despite economically disadvantaged countries feeling threatened (Alexander, 1999; Tarafadar and Alam, 2000). Furthermore, the potential of launching TVET programmes to a mass audience must have appeal to the volume of beneficiaries. Its merit lies in the immediacy of its impact and the prospect it offers of quality programmes for potential learners whose economic transformation would be widespread with lasting repercussions beyond the individuals themselves.

# IS GLOBALISATION THE WAY FORWARD?

Speaking from an idealistic standpoint, everyone is a potential learner. The move towards the idea of lifelong learning has developed a force of its own that suggests inclusion rather than exclusion. ODL institutions in the prosperous North are expanding their horizons with increasing use of information and communication technology (ICT) as a means of delivery (Ohiorhenuan, 1998). Potential learners in the North have a lead in the use of the technology that could result in "technology leapfrogging" for potential learners in the South (Choucri, 1998).

Globalisation as a general concept in world trade, finance and now in education is a fluid phenomenon whose impact on the world stage has been described as operating in a Darwinian framework (Sakbani, 1998). So, in terms of its appropriateness for the disadvantaged economies of the South, one can speculate about both its worthiness for TVET programmes and how long it will be before it is implemented.

There are a number of factors to consider when attempting to assess the viability of globilisation as a mode of delivery for potential learners of TVET programmes. For example, its impact on the economy of countries in the South has, historically, been negative (Tarafadar and Alam, 2000). This has lead to the vulnerable economies of the developing Commonwealth countries being suspicious from the onset. In fact, the impact on ODL practices arising from World Bank/IMF structural adjustment policies, particularly in the case of recipients of loans in African countries, has adversely affected quality (John, 1996b). The evidence of globalisation continues to offer threat to the pessimists, thus making its appropriateness for the delivery of TVET programmes to potential learners a questionable prospect in the immediate future for some countries.

However, another view of globalisation is that it offers positive challenges for the general development of weaker national economies (Gordimer, 1998). Potential learners in such environments are seen to have a lot to gain from TVET programmes using the ODL mode. Consequently, the best solution for those countries is to look for creative economic ideas which combine their well-being, in terms of income-generating schemes, and the political will for good governance. For example, implementation of regional intra-trade policies has been identified as a positive force in minimising the impact of global influence on the national economy (Sakbani, 1998). In that context, the view that some countries in the South are "almost integrated into the globalised economy" may serve as a pointer for what is achievable for all countries in the South (Ohiorhenuan, 1998).

Infrastructure deficiency is usually offered as the main cause of the problem with ODL provision in all sub-regions in the South, even though the factors affecting their respective sub-regional infrastructure may be different. Thus it is possible that differences in economic performance in a South-South context may not always militate against the globalisation of TVET programmes by ODL. Evidence can be adduced in support of this view, particularly in Asia, where seven of the 12 "dynamic developing countries" in the world are located (Khor, 1998). There, per capita incomes today are at least seven times what they were in 1960. (In contrast, sub-Saharan Africa has struggled for years in a declining economic environment caused by persistent political instability. Per capita incomes there are lower than they were in 1970.) Given also that the concept of globalisation is regarded as market driven (Ohiorhenuan, 1998), its strength for countries in the developing South may be found in joint ventures and co-operative schemes, whether political, educational or commercial, that provide the force to minimise the Darwinian effect mentioned earlier. Global ODL delivery of TVET

programmes to potential learners has a much stronger prospect of being realised sooner in the Asia sub-region than some may expect (Aslam, 2000).

Further support has been adduced by evidence of buoyant trade results in Asia and Latin America where, for example, economic and political ties have strengthened over a period of time. In turn, co-operation in matters of politics, commerce and education, including ODL, has encouraged the growth of regionalisation against the impact of globalisation (Sakbani, 1998). The effect has created a level of commitment which has fostered political stability and nurtured standardisation of good management practice. Such a record of regional co-operation, political stability and vigorous intra-trade practice offers a good prospect of effecting global TVET programmes by ODL to potential learners in those regions.

Looking at the scenario posed by the sub-regions of the South, it is true that some regions are better prepared than others for ODL globalisation of TVET programmes to their potential learners. However, there must be no blanket disregard for its implementation on a sub-regional basis, considering its potential to empower marginalised groups.

## SOME EXAMPLES

There is no better way to support proposed ODL practices than to show through examples what has been achieved elsewhere. Limited resources and lives of struggle within developing countries perpetuate underdevelopment, and strategic planning of a radical kind is required to force the pace of change in national and human development. The following examples are meant to serve as a guide to planners of TVET programmes for potential learners by ODL.

### Formal education provision

There are several instances where ODL techniques have been or are being applied to TVET programmes. A look at the database of the International Centre for Distance Learning (ICDL) will show the range and variety of distance taught courses and programmes available that may provide information about existing programmes for potential learners elsewhere and about institutions which could offer assistance. Visit their Web site at *www-icdl.open.ac.uk* for details.

### Skills transfer and collaboration

Regional groupings and inter-governmental organisations like The Commonwealth of Learning (COL) and UNESCO form the caucus of institutional collaborators that offer and facilitate TVET programmes by ODL to potential learners. In Asia, for example, regional meetings leading to working documents, such as the Asia-Pacific Workshop on Vocational Education and Distance Education held in Seoul, Korea, 1996, attest to the level of commitment mentioned earlier. The possibility, therefore, of a mass TVET programme for potential learners is not outside the scope and ability of practitioners in that sub-region. Political will is the key to the solution.

Furthermore, COL facilitates collaboration between institutions that potential learners may benefit from. Just one is the North-South collaboration of distance-taught programmes made available by The Open Polytechnic of New Zealand (TOPNZ) for the

training of surveyors in Zimbabwe. Other examples of North-South collaboration within the Commonwealth have been well documented in COL's newsletter, *Connections*, and other sources (Fordham, 1990; Kinyanjui, 1995).

However, the most popular training programme in many developing Commonwealth countries is that which uses the ODL mode to provide untrained/unqualified teachers with professional training without having to leave their classroom for full-time training. Botswana, Kenya, Swaziland, Tanzania. Uganda, Zimbabwe, Nigeria, Sierra Leone, Guyana, Bangladesh, St. Lucia and Papua New Guinea have all used ODL courses to train teachers and thereby improve their performance in the classroom (Brophy, 1982; Hossain, 2000; Perraton, 1993; Young, 1991). Two other examples of North-South and South-South collaboration in teacher education again provide access to good quality material for further extended use in the Commonwealth (John, 1996a,b; Kinyanjui, 1995; Rotary Club, 1994).

## *Non-formal education provision*

ODL continues to play a revitalising role for developing economies by imparting various functionary skills directly to those whose livelihoods are likely to benefit from the experience (Perraton, 1993; Salooja and Naidu, 2000). In countries across Africa and in Asia, programmes in primary health care and agriculture have been introduced in response to popular concerns which required the attention of national and local governments (Dodds and Mayo, 1992). Within Africa, one notable example is a programme initiated by INADES-Formation, where groups of farmers, the majority of whom are illiterate, agree to study together (INADES-Formation, 1994). The texts, heavily illustrated in colour, visually convey information on what constitutes healthy plants and rich soil. Assignments become a group effort, and the onus is on field workers to ensure that work submitted reflects the entire group and not just the literate leader. Similar programmes also exist in India, but are exclusive to women and are based at the SNDT Women's University in Bombay. This innovative approach to learning offers scope for ODL programmes offering skills training to unemployed youth in the South.

In primary health care, another Africa-based institution of equally strong influence is AMREF (African Medical and Research Foundation). Based in Kenya, its distance education unit offers a variety of primary health care programmes mainly in the eastern and southern Africa sub-region. As in the case with INADES-Formation, face-to-face contact by competent nursing officers provides the interactive support with groups of women to ensure that the essentials of the training are understood and put into effect. Also available is an online programme from Australia for the benefit of nurses working in Asia (Smith, 2000). Modalities of this kind offer approaches which have been tried and tested for possible consideration in other areas.

Programmes such as these help alleviate the lack of support or access to training, particularly for those living in remote regions (Walker, 1999). Similarly, in the formal education sector, the ICDL database reflects institutions in the developing Commonwealth which offer ODL programmes to satisfy existing, much less potential, demand for their services. In countries such as India, Zimbabwe, Tanzania and Nigeria, degree and diploma programmes in law, librarianship and accountancy are always over subscribed (Bhalalusesa, 1999; Nhundu, 1999; Thomas and Ghosh, 1999). The reality is that the limited access to these TVET programmes cannot meet the demand made on the institutions but, at least, potential learners living in remote regions are being catered to, which will help reduce the crisis in education.

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# CONCLUSION

Development theorists tend to favour implementing programmes and policies which push human and economic activities beyond predictable levels of achievement and immediate comprehension. The possibilities of human endeavour thrive better under conditions offering challenges than in those situations where pace is either stagnant or slow. In the former context, technology "leapfrogging" offers scope to those economic environments where the challenges of globalisation are daunting and where human aspirations are not restricted by rigid parameters. In the latter context, recipients of skills acquired may have achieved limited economic empowerment, but do not appear to be able to alleviate their communities/societies from poverty. However, examples of planned programmes by INADES and AMREF are consequently being replicated throughout Africa, but their impact does not offer enough momentum to transform lives. Besides, the range of skills they provide does not offer a wide participatory level locally in TVET skills transfer.

The Asian sub-region, on the basis of factors discussed earlier, is the hallmark of economic progress and vibrancy that conforms to the challenges of globalisation. It is, therefore, not outrageous to presume that global ODL provision of TVET programmes to potential learners is within the political and economic bounds of the Asian sub-region. At the same time, there are countries in the South that could offer similar TVET programmes by ODL using less sophisticated delivery mechanisms by being equally effective for their local conditions. ODL offers enough flexibility that potential learners anywhere can benefit from TVET programmes, whether on a large scale or not (Aslam, 2000). The pre-conditions for technology "leapfrogging" seem to have a basis in economic development and regional co-operation. The African sub-region requires political stability to encourage such requirements to take hold. With that, global ODL provision of TVET programmes to potential learners would have a better prospect of becoming a reality. In any case, other ODL delivery mechanisms have proven to be as equally effective, having withstood the test of time over several generations.

# REFERENCES

Aslam, M.  "Education and Training for Millions — Pedagogical Challenges for Distance Education." Paper presented at Open and Distance Learning in the New Millennium, ICDE Asian Regional Conference, New Delhi, India, 2000.

Alexander, T.  "ICT in Education. Why Are We Interested? What Is At Stake?" *TechKnowLogia* [online] 1, no. 2 (1999). <*www.techknowlogia.org*>

Bartram, J. "Addressing Technical/Vocational Education and Training Challenges." *Connections* 5, no. 2 (2000): 1-3.

Bhalalusesa, E. "The Distance Mode of Learning in Higher Education: The Tanzanian Experience." *Open Learning* 4, no. 2 (1999) 14-23.

Brophy, M. "An Evaluation of a Distance Teaching Approach to Science Teacher Education." Ph.D. thesis, University of Keele, 1982.

Choucri, N. "Knowledge Networking: 'Leapfrogging' Technology." *Cooperation South* [online], no.2, (1998): 40-49. <*www.undp.org/dpa/publications/south.html*>

Dodds, T. "Distance Learning for Pre-Tertiary Education in Africa." In *Open Learning in the Mainstream*. Harlow: Longman Group Ltd, 1994.

Dodds, T. and J.K. Mayo. *The Performance and Promise of Distance Education in Developing Nations: The IEC Experience 1971-1992*. Cambridge: IEC, 1992.

Fordham, P. *Commonwealth Experience in Using Distance Teaching for the Non-Formal Education of Adults: A Review of Case Studies Drawn From Nine Countries/Groups of Countries*. Warwick: University of Warwick, International Centre for Education in Development, 1990.

Gordimer, N. "Cultural Globalization: Living in a Frontierless Land." *Cooperation South* [online], no.2, (1998): 16-21. *<www.undp.org/dpa/publications/south.html>*

Hossain, M. "Is It Possible to Run A Gender Friendly Science Teacher Education Programme by Open and Distance Learning?" Paper presented at Distance Education: An Open Question, Adelaide, Australia, 2000.

INADES-Formation. *Activity Report 1992-93*. Abidjan: INADES-Formation, 1994.

Inquai, S. "Refugees and Distance Education." In *Distance Education: New Perspectives*. London and New York: Routledge, 1993.

John, M. "Distance Education in Sub-Saharan Africa: The Promise and The Struggle." *Open Learning*, 11, no. 2 (1996a) 3-12.

John, M. "Distance Education in Sub-Saharan Africa: The Promise and The Struggle." *Open Learning*, 11, no. 3 (1996b) 21-30.

Khor, M. "Multilateral Agreement on Investment (MAI): Policy Implications for Developing Countries." *Cooperation South* [online], no.2, (1998): 36-47. *<www.undp.org/dpa/publications/south.html>*

Kinyanjui, P.E. "Establishment of an Infrastructure for Distance Education in Africa." In *One World Many Voices: Quality in Open and Distance Learning*. Oslo and Milton Keynes: International Council for Distance Education and The Open University, 1995.

"Matters of Fact." *Choices: The Human Development Magazine*, August (1999): 28.

Mills, R. and A. Tait. "The Impact of Information and Communication Technologies (ICTs) on the Management and Quality in Open and Distance Education." Paper presented at Distance Education: An Open Question, Adelaide, Australia, 2000.

Nanda, R., "Issues and Challenges for Non-formal Education Programmes Through Distance Modes — A Case Study of Jammu and Kashmir with Reference to IGNOU." Paper presented at Open and Distance Learning in the New Millennium, ICDE Asian Regional Conference, New Delhi, India, 2000.

Nhundu, T.J. "University Distance Education in Zimbabwe: Progress, Challenges and Future Prospects." *Indian Journal of Open Learning* 8, no. 2 (1999) 115-129.

Numan, S. and A.K.M. Alagmir. "Effectiveness of Non-formal Education in Bangladesh." Paper presented at Open and Distance Learning in the New Millennium, ICDE Asian Regional Conference, New Delhi, India, 2000.

Ohiorhenuan, J.F.E. "The South in A Era of Globalization." *Cooperation South* [online], no.2, (1998): 6-15. <*www.undp.org/dpa/publications/south.html*>

Perraton, H. "National Developments and International Cooperation in Distance Education in Commonwealth Africa." In *Distance Education: New Perspectives*. London: Routledge, 1993.

Reddi, U.V. "Using ICT for Poverty Reduction: The Evidence So Far and The Lessons Therein." Paper presented at Open and Distance Learning in the New Millennium, ICDE Asian Regional Conference, New Delhi, India, 2000.

Rotary Club of Rubery, England/Rotary Club of Harare City. *Classroom Text and Discourse: A Practical Course on Language in Schools.* Harare: Jongwe Press, 1994.

Sakbani, M. "Pivotal Countries in A Two-track World: Regionalization and Globalization." *Cooperation South* [online], no.2, (1998): 6-20. <*www.undp.org/dpa/publications/south.html*>

Salooja, M.K. and C.G. Naidu. "Open Learning and Distance Education System for Accreditation of Vocational Training Under Non-formal Modes of Education." Paper presented at Open and Distance Learning in the New Millennium, ICDE Asian Regional Conference, New Delhi, India, 2000.

Smith, C. et al. "Online Delivery of A Professional Practice Course: An Opportunity to Enhance Life-Long Learning In Asian Nurses." Paper presented at Distance Education: An Open Question, Adelaide, Australia, 2000.

Smith, P.J. "Developing Strategies for Effective Workplace Use of Flexible Delivery for Training." Paper presented at Distance Education: An Open Question, Adelaide, Australia, 2000.

Tarafadar, M.M. and M.S. Alam. "Globalisation of Education through Technology: Some Ethical and Moral Issues." Paper presented at Distance Education: An Open Question, Adelaide, Australia, 2000.

Thomas, V.K. and C.K. Ghosh. "Teaching of Library and Information Sciences through Distance Mode." *Indian Journal of Open Learning* 8, no. 2 (1999): 171-83.

Visser, J. "Distance Education for the Nine High-Population Countries: A Concept Paper." Paris: UNESCO, Basic Education Division, 1994.

Walker, J. "Open Learning and Rural Health in Australia." Paper presented at the Pan Commonwealth Forum on Open Learning: Empowerment through Knowledge and Technology, Bandar Seri Begawan, Brunei Darussalam, 1999.

World Education Crisis: Roles for Distance Education. General conference proceedings. Robinson College, Cambridge, 1992.

Young, M., et al. *Distance Teaching for The Third World: The Lion And The Clockwork Mouse*, 2d ed. Cambridge: International Extension College, 1991.

# CHAPTER 4

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# THE CURRICULUM

*Keith Dunbar*

## INTRODUCTION

A journey to the centre of the process for developing curriculum should find the learner. This has not consistently been the case in academic programme areas, but it has always been common sense and practice in technical and vocational education and training (TVET). Being learner centred or student centred is a natural orientation in vocational programme development, and since vocational programming has always stressed the process of "doing," expressing content in experiential learning terms is a predictable approach.

Institutions use a variety of methods to bring learners together in formal and non-formal settings. The traditional method of face-to-face instruction in a classroom and laboratory should allow a curriculum to imitate the workplace, although often this is not the case. The method of open and distance learning (ODL) should not follow or repeat this error. Instead the method of ODL should mirror the working world and not drastically alter the process of TVET curriculum development.

If we accept that the end product of TVET is employment for learners, and if we accept industry's role in approving the skills that are needed, then we should use caution in changing the curriculum to meet any method of instruction. It should be clear that this applies to situations where learners are self-employed or where they work for someone else. Care must be taken to identify and sequence occupational competencies needed in the employment world, whether that world is a large company with many employees or a self-employed individual. When industry needs a tradesperson who is skilled in welding two plates of metal together, it should not matter if the training for that skill is conducted at a distance. For training at a distance, however, there are dramatic evolutions in the process of instructional design. Using modern technologies, the educator must carefully choose instructional techniques that will fulfil the curriculum and design an environment where learners can safely learn and practice.

Curriculum development can be described as the process of defining, organising, combining and co-ordinating content so that it leads learners to the acquisition of knowledge, skills and attitudes. For purposes of this discussion, curriculum development is "what" the student will learn, not "how" the learning will be accomplished. (The latter can be illuminated through discussion on instructional design and delivery processes.)

# PHILOSOPHICAL APPROACHES

A personal set of values is a major prerequisite that faces each and every educator. From these values the educator must establish and use a personal, philosophical framework, such as behaviourism or humanism, that will guide the process of curriculum development. Selecting this framework is a critical step since it is a reflection of the educator's educational philosophy. In many cases, however, it may be the government or an institution that selects the framework, not the practising educator. Regardless, the framework is derived from learning theories which are linked closely to psychological philosophies. Learning theories are used as a means to explain how learning occurs.

It is very difficult for educators to completely agree on learning theories or to build an indestructible case for only choosing one. Educational learning theories in the 20th century evolved as new theorists adapted and renamed basic concepts. And how do educators "see" learning theory? For most practical issues, they can only see the results of an applied response to learning theory.

There appears to be at least two main schools of learning theories that are extensively used in TVET: constructivism and outcomes-based approach. The former is emerging while the latter predominates.

## Constructivism

Since we live as individuals first before being connected to other individuals, it can be argued that individual learners must construct knowledge for themselves. Some would argue that there is no knowledge outside of that which we gain through our experiences. Constructivism holds that learning is the process of applying prior knowledge and experience to a new situation and integrating the new knowledge.

Many educators share the view that constructivism calls for the elimination of a standardised curriculum. Rather, it promotes customised curricula and hands-on problem solving. In developing nations, cultural influences and practices can be integrated easily through a constructivist approach. The challenge to curriculum developers becomes how to determine consistency and a common set of standards when each individual is responsible for his or her own knowledge construction. Also, with vocational and technical education, care must be taken to ensure learners are able to do what is desired by employers. Given this dilemma, some might argue that constructivism is better suited to instructional design, as it is more of a process to assist learners to get to the place of knowledge, skills and attitudes than one that defines what is needed. This is especially true when industry specifies what it needs as the end product of education or training.

## Outcomes-based approach

The second group of learning theories and practices are those expressed in terms of outputs rather than inputs. Grouping them under a generic title, they can be considered outcomes-based. All outcomes-based approaches describe learner performance in observable and measurable terms. Included under an outcomes-based approach is the learning theory known as behaviourism. The outcomes-based approach guides

**Participatory curriculum development for transferring knowledge technology to woman farmers**

A Commonwealth of Learning (COL) initiated project was undertaken by the Bangladesh Open University in collaboration with the Department of Agricultural Extension (DAE) of the Bangladesh government and a local non-governmental organisation (NGO) to find an efficient and effective uptake method for transferring knowledge technologies to woman farmers in Bangladesh. The project conducted a needs assessment and feasibility study to design an action-learning environment for the woman farmers who are mainly involved in the production of rice. The target learners for the non-formal educational programme were identified as young woman farmers, with some primary educational background, from resource-poor households. The needs assessment and feasibility study found that there was a significant need for intervention for extending knowledge technologies to the identified group, especially in areas like land and seed, rice production and management and post harvest.

Curriculum was designed to implement an experiential learning model for a group of up to 20 farmers in community and field settings being supervised by a DAE or NGO extension worker over a crop season. To design and help learning to take place, a trainer handbook, self-instructional modules, illustrations, posters, flip charts, handouts and an instructional video programme were also planned.

The participatory curriculum development was particularly useful in identifying practical needs and designing training method, duration, period and support structure. Some of the components, such as emergency preparedness, production planning, costing and management, diversifying and marketing rice products were included for the first time in such curriculum, which could easily be overlooked if the curriculum were developed otherwise.

curriculum by setting goals for learners to accomplish. Descriptions of knowledge, skills and attitudes are expressed in terms of what the learner will be able to do. Objectives, such as instructional, behavioural, terminal and performance objectives, are assumed under this approach. Since competence is a critical component of work in business and industry, expressing performance through competencies has emerged to replace objectives. With its practice firmly set in worker performance, TVET programme development is a natural fit for an outcomes-based approach to curriculum development.

**Competency-based vocational education (CBVE)**

A specific example of an outcomes-based approach to curriculum development, CBVE focuses on the occupational competencies (skills) learners are expected to achieve, and the performance of those competencies. The following components are usually essential in classifying CBVE:

- The occupational competencies to be achieved by the learner are determined through an analysis of the occupation.
- Learners are aware of the learning outcomes and the methods of assessment.
- Learners are assessed on the competencies by observing their performance in conditions similar to that of the occupations.

There is less agreement on other elements to include in CBVE, such as self-pacing, use of prescribed modules or learning guides, performance checklists and the absolute criteria of mastery. Related knowledge and attitudes should not be separated from the learning of the occupational competencies. In many cases, CBVE is less concerned with how the competencies are to be learned, and it is possible to use many methods of teaching such as traditional classroom-based, self-paced and distance education.

## HOW DOES CURRICULUM DEVELOP?

The processes of developing TVET curriculum has not radically changed, even with technological advances. Individual or group processes are two ways of looking at developing curriculum. A single subject matter expert (SME) can take his or her experiences and put them on paper in an organised display of content. The SME will rely on past experience and knowledge to achieve this result. A small group of subject matter experts could also perform the same task. Working together they may be able to identify areas that might be missed by an expert working alone. An individual or a small group of individuals could also use an interview process to identify the knowledge, skills and attitudes required of the subject matter. Working with subject experts and using a prescribed process of interrogation, a final result can be achieved. Finally, a larger group process, led by a facilitator, can chart the knowledge, skills and attitudes needed to fully describe a curriculum. The results from any or all these processes could be validated by using other experts in the field to substantiate the data.

**Need for skilled training in the leather industry of India**

The Government of India identified the need to upgrade skills in tannery workers to propel the Indian leather industry into the 21st century. The formal education system was unable to meet this need for many reasons: the target group was in the workforce, the numbers to be trained were very large (1.4 million), the areas to be trained were not covered by formal systems, learners were distributed geographically through various tanneries, each tannery had needs specific to local requirements, the educational background of learners varied drastically from graduate to illiterate and tanneries found it difficult to spare workers for training.

The Indira Gandhi National Open University (IGNOU) developed a course which was competency- and workplace-based and which used ODL methodologies. Strong partnerships were established between experts both in ODL and in the leather industry to develop and implement the programme. To cater for the range of varied educational backgrounds and languages, the entire course was produced in both print and on audiotape.

The delivery system provided support through work demonstration-based training at the worker's tannery, supplementary support through study centres and assistance through partnering institutes located in the community.

## STANDARDS

A natural product of a well-developed curriculum is a set of standards set by a government or government-appointed regulatory body. Although representatives from industry and education can participate in the standards-setting process, it is important to ensure that they do not exercise a completely self-serving position.

Occupational standards describe the knowledge, skills and attitudes needed to perform competently in the workplace. They help business, industry, educators and learners identify the skills needed to succeed. Properly developed, stated and implemented, they will enhance the TVET environment with the following benefits:

- Developing and maintaining a skilled workforce
- Providing an equitable set of benchmarks for accreditation and certification
- Facilitating employee mobility
- Providing assessment and evaluation guidelines
- Providing a means for human resource planning and performance assessment

**DACUM: A Canadian example**

To meet change and expansion of the employment and vocational training environments in the early 1960s, Canada looked to a systematic process to analyse trades and jobs. DACUM, short for "developing a curriculum," was a Canadian modification of a single-page visual presentation of a curriculum being used by the military in the United States.

Experienced workers, led by a skilled facilitator, analyse their occupation by identifying general and specific skills needed to successfully perform their job. Taken from active work sites to form a panel, these expert workers are the best people to describe their occupation. Although a supervisor may also be on the panel, teachers, trainers or other educators are usually accepted only as observers. Using brainstorming techniques, the occupation is initially analysed into two levels and the results are posted on cards on a wall. The first level of analysis is identifying the general areas of competence (GACs), which describe major responsibilities or functions of the occupation. The second level is identifying the skills that make up the GACs. All the cards become a graphic chart of the duties and tasks performed by successful workers in the occupation. The chart can be used for curriculum development, instructional design, test development, job descriptions, performance evaluation, organisational development and other purposes such as a blueprint for the development of instructional resources.

Although not always practised, sending the chart to a wider audience of workers can validate the results of a DACUM session. Guidelines for changing or adding to the analysis are distributed and the original panel may be consulted or reconvened to integrate the changes into the final version of the chart.

DACUM has been used around the world as a dependable tool in curriculum development and TVET. As a group process using systematic analysis, other programme areas have also used the technique to assist in defining their curriculum and sequencing their instruction.

## ESSENTIAL SKILLS

Regardless of the philosophical approach used to develop curriculum, employers have increasingly stressed the need for essential skills, also known as employability skills, in the TVET curriculum. These skills must be woven into the curriculum in an integrated fashion. They are important elements in helping people adapt to workplace changes and provide them with a foundation to learn other skills. They are not technical skills, but rather the skills people use to carry out a wide variety of everyday life and occupational tasks. For example, workers in many occupations are required to use writing skills.

**National standards in three countries**

In Canada, *occupational standards* are developed by employers and employees working together through a standards development committee supported by Human Resources Development Canada (HRDC). This committee selects small groups of practitioners to develop draft occupational analyses. Before acceptance, each draft is validated nationally. It is important to note that the analysis becomes an occupational standard when it is endorsed by industry.

In the United Kingdom, *national occupational standards* are statements of performance standards which describe what competent people in a particular occupation are expected to be able to do. They cover all the main aspects of an occupation, including current best practice, the ability to adapt to future requirements and the knowledge and understanding which underpins competent performance. They are developed by standards-setting bodies, mainly employer-led national training organisations (NOS).

In Australia, *a training package* is a consistent and reliable set of nationally endorsed standards and qualifications for recognising and assessing peoples' skills. A training package describes what skills and knowledge a person needs to perform effectively in the workplace without prescribing *how* that person should be trained. Training packages are developed by industry through national industry training advisory bodies (ITABs), recognised bodies or by enterprises to meet the identified training needs of specific industries or industry sectors. To gain national endorsement, developers must provide evidence of extensive consultation and support within the industry area or enterprise.

However, depending on the occupation, the skills will range from filling out simple forms to preparing complex reports. Some workers fill out simple forms every day, while others write daily or monthly reports. Improving essential skills enhances a worker's employability. Many different groupings have been designed by various government and industry bodies, but the main ones can be generalised to include the following:

- Computer (information technology)
- Critical thinking
- Lifelong learning (including learning how to learn)
- Numerical (math)
- Planning
- Reading and writing
- Speaking (oral) and listening
- Teamwork

# LEARNING RESOURCES

A well-designed curriculum will lead naturally to the acquisition or development of appropriate learning resources. These may be textbooks that closely match the skills identified. If existing texts do not meet the stated curriculum, specific learning guides or handouts can be prepared. If DACUM or another outcomes-based approach has been used in developing the curriculum, these learning guides, also referred to as modules or learning packages, can be linked specifically to the stated outcomes. With new publishing technologies, modules developed in this form can be mixed, matched and combined to produce a resource that meets specific design requirements of the curriculum. Computers and new technologies are presenting opportunities to modify the traditional print-based objects into digital components. These components, such as digital audio and video clips, provide alternative strategies for teaching skills at a distance.

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**Learning objects**

Technology has introduced a concept of modules or learning packages called learning objects. The IEEE (Institute of Electrical and Electronics Engineers), a non-profit, technical professional association of more than 350,000 individual members in 150 countries, has a Learning Technology Standards Committee which has defined learning objects as "any entity, digital or non-digital, which can be used, re-used or referenced during technology supported learning." These learning objects may be self-contained items or may be combined or sequenced to form longer educational interactions. In order to use learning objects, they must be tagged or labelled so that the contents are properly known to all the potential users. Learning objects are reusable. For example, a learning object that defines the basic principles of hydraulics could be used by courses for auto mechanics, construction workers and millwrights. Many countries are researching the use of learning objects, especially in the preparation of materials used in distance education. It is clear to see how curriculum designed through an outcomes-based process will be able to make use of learning objects.

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# PROFESSIONAL CONTINUING EDUCATION

Professional development is the ongoing process of increasing an individual's competence. For faculty this includes technical expertise in their field as well as the knowledge and skills to support student learning. Technological changes in the way work is done means that similar changes will be needed in learning how to do the work. Although approaches to curriculum development have not been greatly altered by technology, the skills of teaching have been significantly impacted by it. The need for

in-service training has never been greater. Although the learning environment may no longer be a teacher-centred process, teaching skills need to be addressed. Facilitation skills need to be added to the portfolio of techniques. Switching from a face-to-face synchronous environment to a remote asynchronous environment carries a major shift in the approaches needed by faculty. In the end, the need for professional continuing education increases proportionally with the changes in technology that support education.

## CONCLUSION

Access has become one of the most important variables for learners who wish to participate in educational activities. The need for just-in-time training opportunities has propelled ODL as a major tool in providing access to learners in TVET who might otherwise be unable to participate. In many cases, changes to ODL have been responsible for an increase in the demand for education and training opportunities. Although many developing nations lack a sophisticated infrastructure, the pace of technological change in delivering education at a distance is having a positive impact. The technological tools, however, cannot replace sound principles of educational planning and design. This has even greater significance in TVET where safety and demonstrated learning are benchmarks of success. The challenge of replicating the workplace in distance education is less daunting when sound principles of curriculum development are used to analyse the requirements. These principles are aided by a close working partnership of learners, educators, government and employers who support each other to meet all the learning needs. After all, this collaboration merely reflects one of the essential skills required of learners in TVET — teamwork.

# CHAPTER 5

## NEEDS IDENTIFICATION AND PROGRAMME EVALUATION

*Neville Weal*

### INTRODUCTION

A quality technical and vocational education and training (TVET) programme has the following qualities:
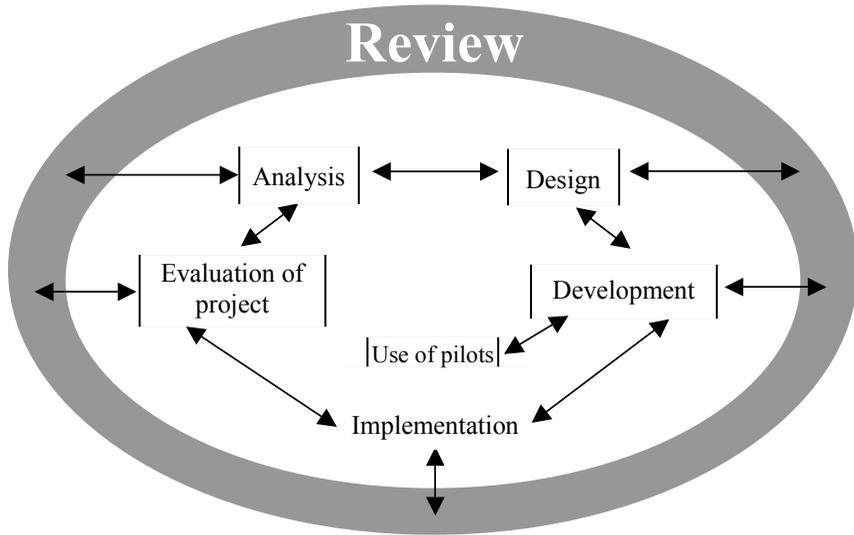
- It is *relevant* – it meets the needs of the target group.

- It is *flexible* – it can adapt to changing needs resulting from things such as economic or political changes. Flexibility is often obtained through modularisation, as small modules can be changed, dropped or developed according to perceived needs.

- It is *effective and efficient* – it produces results.

- It is *accessible* – it is able to be undertaken by the desired participants.

- It is *sustainable* – it has the resource base to succeed.

- It is *compatible* with the general requirements of the society, involving people economically and politically. An emphasis in developing particular attributes or values in participants such as critical and independent thinking, self-reliance and honesty may be important desired outcomes.

In order to provide an effective TVET programme, a firm foundation must be laid. This requires a careful analysis of the needs of target groups to identify the learning and development activities that will produce the changes that are desired in a community. It should also identify the resources available that will assist learning.

### A COURSE DEVELOPMENT PROCESS

Open and distance learning (ODL) providers invariably use a phased model to provide a structured learning programme, as shown in Figure 5.1.

*Figure 5.1: Model of structured learning*



Each of the processes shown in Figure 5.1 involves the development of an output, which is defined in Table 5.1.

*Table 5.1: Development of outputs*

| ACTIVITY | OUTPUT |
|---|---|
| Analysis | A clear statement of —<br>• Issues to be resolved,<br>• The target population<br>• Identified resources and constraints |
| Design | A detailed plan that describes how, when, by whom and at what cost the learning could be provided. |
| Development | A complete learning package including —<br>• All learning and teaching-related materials and equipment<br>• Plans for delivery<br>• Any generic type learner support materials<br>• Learner and course evaluation and materials<br><br>*Note: Piloting a programme with advanced students or prospective teachers is a way of checking that a programme is appropriate for more general use.* |
| Implementation | Learner progress and performance records and evaluation data. |
| Evaluation | The measures that will be used to assess that actions and results are occurring according to the plan. |
| Review —<br>an ongoing process at every stage of the development | A quality control process where necessary resulting in revised activities that will either put things back on course or improve the delivery of the programme in the field. |

In the analysis stage, a formal or informal needs analysis may be undertaken. At the same time, *evaluation criteria* also need to be considered so that during the implementation phase monitoring can occur to ensure that planned deliverables are, in fact, being achieved and timely interventions can be made before a programme gets too far off the track. Evaluation activities need to be seen as an integral component of a learning programme and need to focus on:

- How well the learning meets the goals originally identified
- How well the programme meets the needs of the learners and other stakeholders
- What contingencies are planned if the programme shows signs of not delivering what was intended

Ongoing review is essential throughout the process to ensure that things are on track to meet any desired outcomes of a project.

## IDENTIFYING NEEDS

A needs analysis is a universal method of finding out what is required. A needs analysis sets out to identify:

- The learning and development needs of the group and/or individuals within the group and what any instruction should accomplish
- What constitutes competent performance
- What is worth teaching and whether instruction is in fact called for
- The support required for learning to occur
- The associated needs of funders and other contributors, be they entities such as foreign or local governments, non-governmental organisations (NGOs), philanthropists or community groups

Requests for TVET activities can arise from within a community or from agencies involved directly or indirectly in the activities of a community. Each training request needs to be analysed carefully to see if its purpose will contribute to a group's well-being and if a pragmatic workable solution is possible. It is important to determine if the content and design of a training programme will result in the outcomes desired; be appropriate for the needs, skills and attributes of the intended participants; and be able to be delivered within the resource constraints of the community. For example, in the Pacific Islands, the reliability of getting materials to communities can be an issue, particularly to outlying areas with no regular air, sea or land transport. This may necessitate programmes being designed as a core set of teaching resources supported by a range of local resources including personnel.

A systematic investigation of local needs and readily available resources needs to be carried out, including consideration of things such as:

- Identification of the target population (i.e., age, sex, language, literacy and numeracy levels, education achievement to date, and cultural norms that need to be considered in light of possible training including learning styles)
- Location and topography, which can influence access to equipment, the delivery of support services and closeness to job markets
- The actual needs for skills in a community, and the importance a community places on its members gaining new skills and knowledge (Decisions need to be made about whether training is job-specific or generic.)

- Previous education and training activities that have been undertaken and their success or failure (Lessons can be learnt from what worked or did not work in the past with a community.)

- Existing social and economic infrastructures which can influence things such as access to power sources and equipment and available resources that could contribute to a programme (The latter includes the potential for collaboration with key influencers within a community, access to opportunities for hands-on learning and opportunities that will exist for the skills to be used later.)

- Economic activities in the area that may influence when best to schedule teaching activities (e.g., the influence of seasons on appropriate timing for instruction)

A needs analysis may be undertaken in different ways:

- Within a community, by capturing their knowledge using processes such as brainstorming with a group of locals to compile their needs

- Using an independent consultant/facilitator to work through a needs analysis process objectively with selected groups or individuals within a community

- By an organisation or group providing a selected institution or individual who is deemed competent to complete an analysis based on a brief outline of perceived requirements using minimal community input (This is often a lower-cost way of getting an analysis done, but it is a high-risk strategy with success dependent upon the skill of the people doing the analysis.)

For example, a staff member of The Open Polytechnic of New Zealand with needs analysis expertise has worked with staff of the Tarawa Technical Institute in Kiribati to convert face-to face material to a set of distance learning materials for students on outer islands where there was a need for basic management skills to be developed. This analysis made extensive use of local knowledge to ascertain what was required and the environment in which it could be provided.

The amount of surveying undertaken can vary according to the complexity of a situation. Detailed market surveys and studies may be undertaken to identify specific needs. Alternatively, it may be that pragmatism indicates what is required, and a quick agreement can be obtained from all key participants on how education and training opportunities using ODL teaching methods can be used in a particular situation.

In assessing needs, it is important to identify *whose* needs are to be met by a particular programme. The needs of learners, communities, societies, funders and employers must all be considered. In setting up a programme, future development needs should also be considered.

The practical feasibility of a planned course needs to be considered. Factors influencing feasibility could include the following:

- The number of participants

- The availability of people to participate in the course (e.g., where structured support is integrated into the programme, what times in the day or evening are people available?)

- The availability of an appropriate environment for learning to be undertaken

- Any community contribution and acceptance, including programme viability, health and safety-related issues and supervision

- The age and educational levels of the intended participants

Where training is to be undertaken in the workplace, an assessment needs to be made not only of the desired learning, but also of how the learning can be supported within a community for the ODL strategies that are to be used. Designing workplace "trainers and/or assessors" into the programme can often be a useful solution. The requirements of such mentors and learning supporters should also be considered at the needs analysis stage so that appropriate training for them and roles in the delivery of the learning can be incorporated into the programme.

## A LEARNING NEEDS ANALYSIS PROCESS

There are a number of different types of analyses that can be used to identify the learning and development needs of individual adults and groups. (Specific details of techniques can be found in training texts.) These are outlined in Table 5.2.

*Table 5.2: Types of needs analyses*

| TYPE OF ANALYSIS | FUNDAMENTAL QUESTION THE ANALYSIS EXPLORES |
| --- | --- |
| Performance analysis | Why are people doing what they are doing? |
| Results analysis | Why are the business results the way they are? |
| Job analysis | What work are people responsible for? |
| Task analysis | What tasks do people do and what are the skills involved? |
| Skills audit | What skill levels are currently available within a particular community or work environment? |

There are four steps involved in the learning needs analysis process:

1. Planning the analysis
2. Collecting the data
3. Analysing the data
4. Reporting the findings

### Planning the analysis

In planning the analysis, an overall analysis objective must first be set (e.g., the date it is to be finished and what the purpose of the analysis is). Next, the target audience must be identified (e.g., describing the potential learners and other potential stakeholders).

Next comes identifying the type of data that will need to be collected for the analysis and choosing how to collect the data and from whom and where it will be collected. The way this is done needs to be appropriate to the group. For example, a face-to-face talk rather than a questionnaire would be more appropriate when seeking information from people who do not have good reading or writing skills or whose culture has an oral base.

After this, any protocols to follow must be identified (e.g., whom to visit, when to visit them and who needs to be consulted before any contacts are made). Finally, it must be determined how reporting back will be done and to whom. Who will get the report and what sort of information do they need? In what form will the report be provided to its audience?

### Collecting the data

Collecting the data requires carrying out what you have planned.

### Analysing the data

Analysing the data involves identifying any required learning outcomes (i.e., what people should consequently be able to perform on the job) and the skills, knowledge and attributes required to do a job. It also involves identifying the gap between the required and actual levels of performance and the learning needs and support that will be required for learning to occur.

Analysing includes verifying the data and the results. It is wise to check with people consulted as part of the analysis to ensure that the results make sense.

### Reporting the findings

Reporting the findings could be done in a variety of ways ranging from a formal written report or informal feedback to a meeting of interested parties. It is important to respect any cultural norms during the reporting phase.

## ASSEMBLING THE DEVELOPMENT TEAM

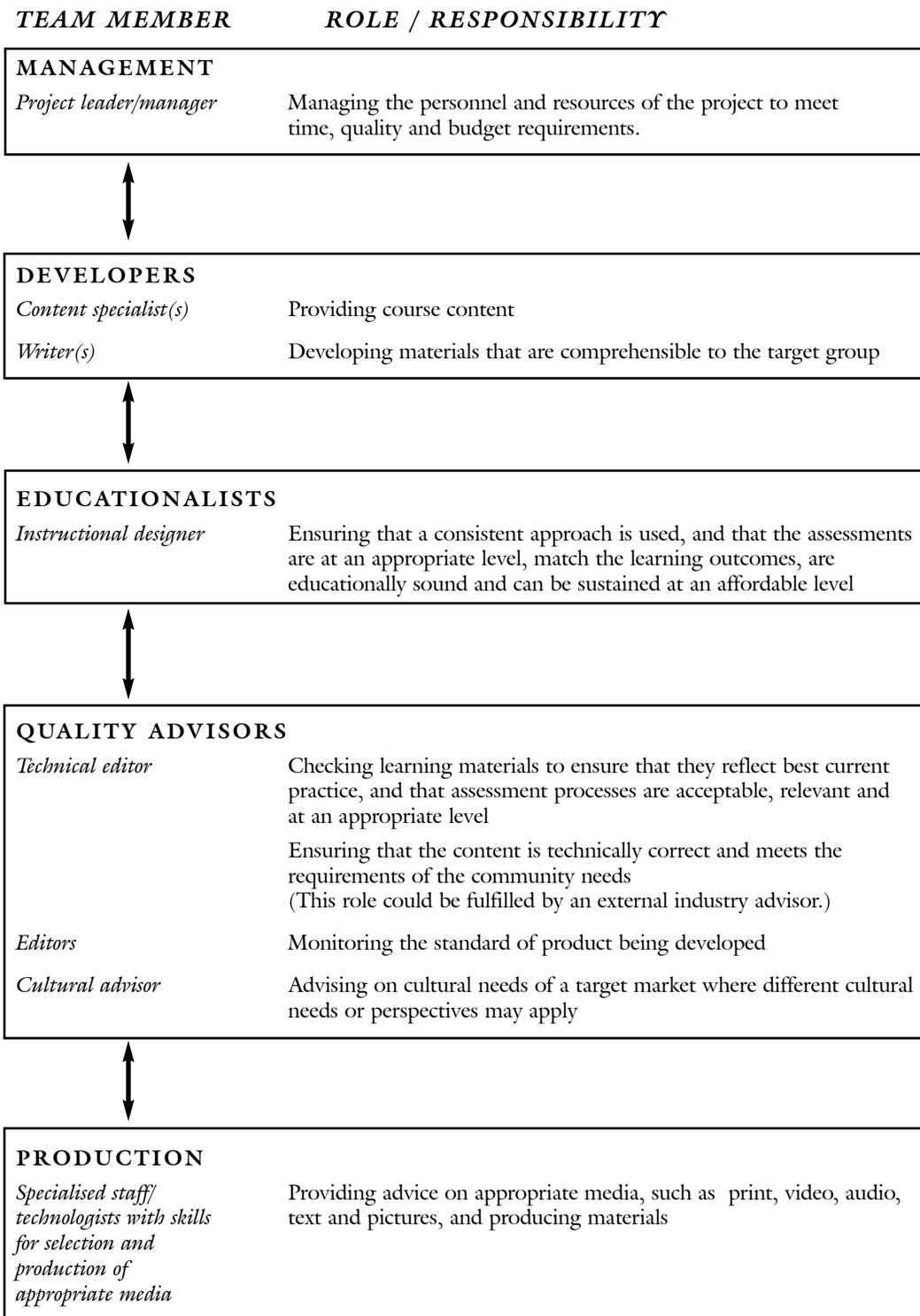The development of a learning programme requires the following mixture of skills:

- Content expertise
- Instructional design expertise
- Cultural expertise
- Project management
- Production knowledge

As these skills are rarely available in a single person, a development team usually needs to be assembled to develop a learning programme that meets the identified needs. Nevertheless there may be an individual in a team who is able to undertake more than one role.

### Team composition

A model describing the roles of people involved for a course design team is shown in Figure 5.2.

*Figure 5.2: Course design team model*

| TEAM MEMBER | ROLE / RESPONSIBILITY |
|---|---|
| **MANAGEMENT** | |
| *Project leader/manager* | Managing the personnel and resources of the project to meet time, quality and budget requirements. |

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| | |
|---|---|
| **DEVELOPERS** | |
| *Content specialist(s)* | Providing course content |
| *Writer(s)* | Developing materials that are comprehensible to the target group |

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| | |
|---|---|
| **EDUCATIONALISTS** | |
| *Instructional designer* | Ensuring that a consistent approach is used, and that the assessments are at an appropriate level, match the learning outcomes, are educationally sound and can be sustained at an affordable level |

↕

| | |
|---|---|
| **QUALITY ADVISORS** | |
| *Technical editor* | Checking learning materials to ensure that they reflect best current practice, and that assessment processes are acceptable, relevant and at an appropriate level |
| | Ensuring that the content is technically correct and meets the requirements of the community needs (This role could be fulfilled by an external industry advisor.) |
| *Editors* | Monitoring the standard of product being developed |
| *Cultural advisor* | Advising on cultural needs of a target market where different cultural needs or perspectives may apply |

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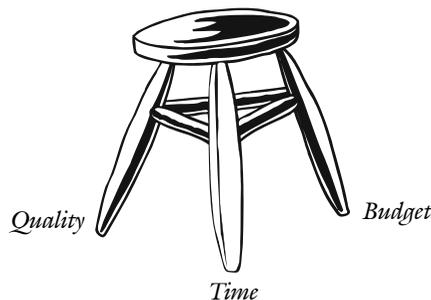| | |
|---|---|
| **PRODUCTION** | |
| *Specialised staff/ technologists with skills for selection and production of appropriate media* | Providing advice on appropriate media, such as print, video, audio, text and pictures, and producing materials |

## *Forming a team*

In forming the team, the preferred mode of delivery must be considered so that appropriate instructional designer expertise is included. Where technology is to be used as part of the learning strategy, a person with the appropriate understanding of the technology needs to be included. At the needs analysis stage, it is advisable to have as many potential team members involved in the project as possible to give advice (although depending on the project, this is not always possible). The advantage of involving as many of the potential team as early as is practicable is that it increases the "ownership" of the project and reduces the risk of fall-out due to "surprises" or misunderstandings related to the project's purpose and any underlying values and behaviours necessary for the project's effective achievement.

## DETERMINING THE QUALITY OF LEARNING MATERIAL

The final quality required of learning materials must be determined before development begins, and thus should be one of the outcomes of a needs analysis. It is like a three-legged stool, with quality, time and budget being the three legs. (See Figure 5.3.)

*Figure 5.3: Quality of learning materials*



- If the quality is to be high (such as colour printing, photography, CD-ROM, and video), then that "leg" is longer, and the other two legs will need to be of sufficient length to match it to ensure the stool (project) does not fall over.

- If, however, the timeline is very short, then the quality leg might also have to shorten, but unless managed carefully, the budget leg may lengthen, which makes for an unstable stool or a high-risk project.

- If there is a very limited budget, then again the quality leg will likely be short, and without careful management, the timeline may lengthen and the project could be risky.

## USING EXISTING LEARNING PACKAGES

Many developers do produce materials that have many learning opportunities resident within them, namely mixed-mode delivery, distance education delivery and work site delivery.

Once the analysis is complete, an exploration of existing ODL provision in the area of need may result in learning materials being sourced that can be used as is or adapted. This exploration is often considered as part of a needs analysis: being able to adapt existing materials can have a significant impact on the cost of development and the speed at which the learning can be commenced. This approach, however, can involve high risk and raise substantial issues of the suitability of the pedagogical approach and its appropriateness for target groups.

## LEARNING MATERIALS DEVELOPMENT CHECKLIST

The following checklist may be a useful tool for helping to determine that all avenues have been covered when developing learning packages or buying existing materials for adaptation:

- ❑  Level of course
- ❑  Standard of presentation (printing, graphics, video, etc.)
- ❑  Quality of content
- ❑  Standard and level of writing and suitability for translation
- ❑  Cost of purchase, licensing, etc.
- ❑  Appropriateness of case studies, graphics, etc.
- ❑  Compatibility of technology
- ❑  Reference to relevant legislation
- ❑  Copyright clearance
- ❑  Length of time needed to convert material
- ❑  Cost of converting or developing material
- ❑  Cultural and learning styles (one product may not fit all)
- ❑  Arrangements for updating material
- ❑  Any other specifics

## ACKNOWLEDGEMENTS

# CHAPTER 6

## STUDENT SUPPORT IN OPEN AND DISTANCE LEARNING FOR TVET

*Ved Goel*

## INTRODUCTION

In the delivery of technical vocational education and training (TVET) through distance education, student support plays the pivotal role. Whether provided to an individual student or group of students, student support is necessary and complementary to the print material supplied. Student support includes all those activities (administrative or academic) which help students progress through the course.

Many distance education practitioners have written extensively on the scope of student support in open and distance learning (ODL) (Reid, 1998; Rumble, 2000; Simpson, 2000; Tait, 2000; Wright, 1989). They have all emphasised that student support services are integral to the overall working of ODL. And although the objectives of a student support system in distance education cannot be defined as a requirement to guarantee success for all students, it is well documented that when it comes to articulating what we mean by student services, distance educators are way ahead of their colleagues in conventional universities.

## AREAS OF STUDENT SUPPORT

Student support in TVET through distance education can be broadly categorised into two areas. The first is the administrative (or non-academic) support and includes activities or services which support students in making enquiries, admissions, pre-study advisory services, record-keeping, information management, non-academic aspects of assessment, library services and other administrative aspects. The second is the academic support, which consists of defining the course, explaining concepts, exploring the course, providing feedback (both formal and informal), providing hands-on practical experiences, developing learning skills, following up students' progress through the course, extending the boundaries of the course and sharing the excitement of learning (Simpson, 2000).

There are a number of approaches followed to provide academic support to students. These include the following:

- Establishing study centres, which are used for tutoring an individual student or a group of students
- Conducting counselling sessions
- Self-study help (peer group)
- Mentoring
- Telephone contact and e-mail
- Television and radio broadcasts
- Specially designed audio-videotapes and computer-mediated communication

For hands-on practical work, students are supported either at work (industry based) or at an institution providing necessary infrastructure (institution based). Student support services have to be equitable, gender sensitive and flexible to meet the special needs of learners. The main objective of student support is to support individual learning. It is based on the delivery requirements of clients, not the interests of trainers or providers. Leach (2000) has identified the following key characteristics of student support in vocational and professional areas:

- Support should provide a model learning environment.
- Support should build on an existing framework as far as possible and be consonant with the culture in which it is developed.
- Support should be developmental and exploratory, providing experience of a wide variety of teaching and learning opportunities.
- Support should recognise and build on the variety of professional experiences and its participants.
- Support should acknowledge both the private and professional aspects of the learners' experiences and their interconnectedness in the development of learning.
- Support should be rooted in the practical skills development in a real work situation.

## STUDY CENTRES

Study centres are the backbone of ODL and make it different from correspondence education. A study centre, which provides quality reception and quality tuition to its students, is highly motivating and encourages students to learn. Mills (2000) has described the following support facilities available at study centres:

- A place for individual study in appropriate surroundings and at appropriate times
- Library facilities
- Laboratory and hands-on practical work facilities
- An opportunity for students to meet the distance education institution's administrative staff
- An opportunity to meet fellow students in the same and/or different course
- A focus for students' association activities
- A source of information and guidance to the general public in a local area
- Access to technology

- Access to local guidance and counselling, individual and group tuition, group viewing and listening
- Facilities for taking test and examinations

There can be a great variety in study centres within the same university and also across different open universities worldwide. Here are just a few examples:

- In some open and distance institutions such as Indira Gandhi National Open University of India (IGNOU) about 630 study centres are funded by the institution itself and managed by its full- and part-time staff. Many of these study centres are, however, located in the buildings of other formal colleges. These study centres provide all the functions described above and have a corporate image with which the students can easily identify.

- The other extreme is the model of study centres of Open University in the UK (UKOU). There, study centres are suites of rooms in another institution's building (normally a college of further education), which are rented during evenings or on Saturdays. Students normally attend for face-to-face tuition.

- In Germany and Spain, the communities provide and pay for study centres. These centres are located in community halls, public buildings, town halls and commercial buildings.

- The South African Institute for Distance Education promotes the concept of community learning centres: local community centres sharing their space (and the cost of infrastructure) with a distance education institution. This arrangement allows the distance education institution to get involved in the local community. These study centres are playing a critical role of organising socially significant programmes.

- The Open University of Hong Kong (OUHK) provides facilities for a library, an electronic library, a computer laboratory, a science laboratory, an audiovisual centre, a language laboratory, and places for disabled students. It also provides six self-study centres, study centres, surgeries, television broadcasting workshops, day schools, computers and science labs for hands-on experiments. The Lee Hyson Foundation donated science laboratories and the environmental laboratory, providing hundreds of students at one time with a place to conduct experiments and write examinations. So, unlike the UKOU where students largely conduct experiments independently with the help of home kits, at the OUHK such kits are used at study centres under guided supervision of the tutors.

- The Open University of Israel has the provision of headquarters and about 110 study centres all over the country. Such centres, along with libraries and laboratories, are housed in the conventional education institutions.

- At the Central Radio and Television University (CRTVU) in China, teaching-learning practice is largely through radio and television broadcasts. The university follows a network of provincial radio and television universities (PRTVUs) (governed by the provincial education commissions), branch schools (governed by the civic education bureaus) and TV classes (conducted at workplaces). The network comprises 43 PRTVUs, 666 branch schools, 1100 work stations and over 30,000 TV classes. The core radio and video classes (along with adjunct printed materials) are distributed by the CRTVU, while the PRTVUs are free to develop their own radio and television programmes to meet the provincial education and training needs and to conduct provincial examinations. The branch schools monitor and co-ordinate the teaching-learning activities relating to radio and TV

programmes, tutorials, field study, lab work, tests and examinations.  They also govern work stations and TV classes. It is the work stations which admit students, distribute materials and conduct tutorials. The TV classes are places to view programmes, conduct hands-on experiments and field studies, and maintain contacts with enterprises/work units to which the students are attached. The CRTVU system is an excellent example of centralised decentralisation and a coherent system of mass distance education and training.

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**Student support in  training doctors in child health care in India**

A variation on the study centre model is the delivery of a programme to upgrade the skills of doctors in rural communities in India through a network of programme study centres (PSCs), skill development centres (SDCs) and the workplace. The multimedia teaching-learning package includes print materials, practical manuals, assignments, log books, counselling, hands-on training, video and teleconferencing. While the materials and teleconferencing are delivered by the IGNOU headquarters, counselling and experiments take place at medical colleges (PSCs) under the supervision of a medical professor. Repeat practice on a number of patients takes place at the district hospitals (SDCs) under the supervision of a hospital doctor, and the skills in areas of preventive and social medicine, paediatrics, and obstetrics and gynaecology are further practised at the primary health centre (i.e., the workplace).  Since health is a state subject in India, the Regional Health Science Advisory Committee and the regional consultant in each state were important instruments of programme implementation and monitoring.  Twenty-three PSCs in 18 states with 140 SDCs are involved in implementing the programme, and each doctor-counsellor at the PSC and SDC is responsible for providing counselling and mentoring support to four to six student doctors who maintain log books for cross-centre monitoring and for purposes of evaluation (Panda and Jena, 2001).

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## TUTORING

Tutoring brings ODL closer to face-to-face teaching of conventional universities. But skills of tutoring required in distance learning are much more complex and sophisticated than those required in conventional universities. Distance learning promotes independent learning and active participation of the learner: the two fundamental pillars of education. According to Simpson (2000), a distance tutor has to perform a combination of the following functions:

• *Defining the scope of the course*. In distance learning, the course materials provided to students define the syllabus. It is, therefore, tutors who define the scope of the course.

- *Explaining the course*. A tutor explains the course through individual tutoring or small group discussions or whole class teaching. The tutor has to be aware of different resources such as audio, videotapes, CD-ROM and other media support available for a particular course that could provide a variety of expositions for understanding the content. Unlike a conventional tutor who provides elucidation of the course, the distance tutor is mindful that elucidation is the responsibility of the course materials and the tutor's responsibility is to facilitate learning. A distant tutor provides alternative explanations when the student seeks assistance on course materials that he or she finds particularly difficult.

- *Developing study skills*. Having strong study skills enables a distant learner to take full advantage of printed and other resources available. The course materials themselves, which are perceived difficult by many students, can't help the students develop study skills necessary to use the materials to their best advantage. Therefore the responsibility of helping students develop those skills falls on the shoulders of the tutors.

- *Assessing students*. In distance education, generally the course material includes a number of self-assessment questions. There are, however, some doubts about their effective use by students. A tutor can informally ask questions to assess students, discuss the answer and frame a supplementary question. Tutors also carry out formal assessment through assignments, which are marked either manually or by computer. Assignments provide an opportunity for invaluable feedback to students. For many students this feedback is the most substantial teaching contact with their tutor.

- *Monitoring progress*. A tutor keeps a record of all assignments submitted by students and takes proactive action if someone seems to be failing in meeting targets.

- *Organising and supervising hands-on practical work*. This function is of special importance in TVET. It is the activity that focuses on the critical skill development. The practical dimension in TVET has led to the development of the concept of partnership between educational institution, industry and community. ODL institutions follow a variety of approaches in providing student support in hands-on practical work. It might be industry-based, where the immediate supervisor of the student or a designated staff person performs the function of tutor for that part of the course. In other cases, the institution offering the course provides facilities for practical work at study centres and/or at its headquarters. The study centre may be specifically set up and managed by the distance learning institution or another conventional institution. At the study centre the faculty members responsible for the course then perform the tutoring role.

## TECHNOLOGY AND STUDENT SUPPORT

Research studies have indicated that student support sustains motivation of students to learn and continue the course and not drop out.

In reviewing technologies that are available for student support in open and distance education, it is tempting to focus on the new and latest developments in information and communications technology (ICT). The experience of open universities in both the developing and developed world suggest that students are best served when a combination of old and new technologies are employed.

**Training laboratory technicians through distance**

The Kenya Polytechnic Nairobi offers a certificate course through distance for the training of science laboratory technicians. The students are mostly laboratory assistants working in secondary schools. The course has a strong hands-on practical work component and students have to perform a number of experiments in physics, chemistry, biology and laboratory safety. The focus of the practical work is on development of skills that will enable laboratory technicians to handle equipment accurately, carry out regular maintenance and make simple repairs. Practical work also focuses on preparing reagents, biological specimens and safe disposal of laboratory waste. Skills associated with providing a safe working laboratory environment is also included in the practical work. Since the number of students admitted to the course is limited, the students come to the Kenya Polytechnic Nairobi to perform experiments under the guidance and supervision of faculty members. To ensure that students don't have to come again to Nairobi from far-off places, they are also assessed on their practical skills at the end of the practical work. While students are in the Polytechnic performing practical work, they get face-to-face tuition also on course materials.

In discussing the role of technology in student support it is, however, important to recognise that the choices are made in part by what is readily available, what is best for the task at hand, what students can easily use and what is affordable by both the institution and the students. Bates (1995) has proposed an ACTIONS model for the selection of media and technology for teaching, which is also applicable in the selection of technology for student support. (The acronym ACTIONS stands for access, costs, teaching/learning, interactivity and user-friendliness, organisational issues, novelty and speed.)

## *Audio-based technologies*

- *Radio* has long been one of the most important forms of audio technology by many higher education institutions such as University of Nairobi, National Correspondence Institute Tanzania and University of Zambia to support their correspondence courses. Many of the ODL institutions such as Central Radio and Television University of China, Sukhothai Thammathirat Open University of Thailand, Indira Gandhi National Open University in India (IGNOU) and Open University of UK (UKOU) have used radio for student support. The radio programmes either take up crucial concepts from those covered in the print and clarify them, or they provide an alternative perspective in which to view a concept which is already covered in the printed course material. Radio programmes are not interactive, and they cover only the theoretical part of the course. They do not help in developing hands-on practical skills.

**The importance of sustaining motivation**

Nursing students in an ODL course who had support from fellow students and university personnel were the ones most likely to succeed. Two important issues underpinned this factor: the acknowledgement of the needs of adult learners and the recognition and fulfilment of the students' own needs. It was important to the students that they had a choice in whether to attend tutorials and participate in debates and discussions. A close network had emerged in the tutorial groups with telephone support and group meetings arranged and facilitated by the students. This added to the students' well-being enabling them to feel supported and valued as individuals. It also combated the potential isolation of open learning, something the students were well aware of: "I think if I was on my own it would have been difficult. I would have given up sooner." The importance of the tutor and their facilitation role was discussed in various forms and the effect that relationship had on motivation did not go unnoticed by the students themselves. One student felt surprised that the tutor was interested in what he as a student might be able to contribute (Scott, Burns and Cooney, 1998).

- *Audio cassettes* have been used by almost all institutions providing some form of distance education. Audio cassettes are much more flexible than radio programmes since they can be listened to by students at their convenience. Moreover a student can listen to part or all of a programme on a cassette as many times as he or she wishes. In some countries, audio cassettes are supplementing radio programmes. At the UKOU, the number of hours of radio broadcasts has decreased over the years, but the supply of audio cassettes has increased in the same period. Like radio programmes, audio cassettes also have their limitation in TVET programmes.

- *Telephone* has been used occasionally to offer student support, but telephone support tends to be individualistic and expensive since calls are very expensive in many countries. Telephone support could occur among peers or between student and tutor. One of the advantages of support through telephone is its immediacy. The disadvantage is lack of visual contact and absence of body language. Student support through telephone has the limitation of being restricted to only cognitive aspects of the course, though it has been found to be as effective as face-to-face student support.

- *Teleconferencing*, also known as audio-conferencing, is popular in countries such as Australia, Canada and India where distances between tutor and student can be great. In this mode, the tutor sets the agenda of the conference and at the other end, which is generally a study centre, a number of students sit across a table with a loudspeaker attached to the telephone. For a conference call to be successful, it has to be structured with the tutor seeking comments from each student by name, rather than from the whole group.

Teleconferencing has been used by the University of the West Indies satellite project, UWIDIET in programmes of continuing education. The University of the South Pacific has also used audio links of this kind to support students in island states. In New Zealand, Otaga University has used radio to link a number of regional centres for audio conferencing in its programmes of continuing professional development. And in Canada, Memorial University has done a pioneering job by using such technology for medicine and continuing education.

- *Voice conferencing* is the combination of a telephone and computer to provide a complex voice mail service. By making a telephone call to a number set up by the course provider, students can select from a menu of services provided, which can be available even on weekends and holidays. This service has been successfully used in Australia and is on trial at UKOU. One study conducted on students taking law subjects in Australia reported this:

> Computer-based voice conferencing system is a potent and cost-effective means of minimising isolation, distance from other students and perceived disadvantages compared to internal students studying same subjects. These bulletins are seen as having a variety of possible uses including covering developments in dynamic disciplines after the cut-off time, extending the "shelf-life" of print-based materials, providing students with particular needs with a valued form of contact and being either a regular feature of subjects or used at peak times. They provide a means for spontaneity and for students to share setting the agenda — features perhaps not often associated with teaching in the distance mode (Carmichael, 1995).

## *Video-based technologies*

- *Television* has been widely used by many distance education institutions to support students, particularly in developed countries. Like radio, it reaches a fairly large number of students' homes. Moreover, unlike radio, television programmes permit the richness of full symbolic representation. Developing countries have not been able to use television as much because production costs tend to be higher and broadcasting authorities tend to be reluctant to use air time for small audiences.

- *Video cassettes* are a powerful resource for providing student support in ODL. They do use television, but not the air time. Like audio cassettes, they can be used by students at their convenience, either at home or at the study centres individually or in groups. In TVET programmes, video cassettes play a significant role because they can be used to demonstrate equipment, tools and/or the processes to be used in the tasks being learned. The University of Victoria in Canada used video to support students taking a certificate course in computer-based information systems.

## *Computer-based technologies*

In many countries, computers are being used in a variety of ways to provide student support.

- *Computer conferencing* is generally orchestrated by the tutor and involves posting a directional message, like a message on a notice board, which can be accessed by students at their convenience by logging on to a computer either at home or at a study centre. Students can then contribute to the discussion by posting their own messages. They can respond to each other's contributions and the tutor can

intervene at any time. In computer conferences the tutor normally takes the role of stimulator and boundary setter. The tutor summarises the discussion at regular intervals and posts more questions for discussion. Studies have indicated that the use of computer conferences is not dependent on prior use of computers and that conferences appeal to inexperienced users. However it is common for students to "drop out" of computer conferences, so they do need to be supported in the early stages. Learning through computer conference is a self-directed, self-managed and self-motivated process. The students who benefit most from such a system are those who have perseverance and use the conference for interaction and seeking information.

- *E-mail* communication has also become very common. Students use either their own computers or those at a study centres or an Internet café to send e-mail messages to peers or tutors to seek clarification on any topic of the course.

## *Virtual campuses*

A particular development in programme delivery and student support in the last few years has been the establishment of the virtual university or campus, which provides for all transactions in teaching-learning at a distance (from student registration to certification) online. A few independent virtual institutions have arisen in the last decade, and some open universities (like the UKOU) and campus-based universities (like the University of British Columbia in Canada) have aggressively entered the realm of online teaching-learning. The most talked about is the Western Governors University in the US, which employs Internet, e-mail, CCTV, voice mail, audio and video, videoconferencing and postal service for offering competency-based programmes acquired through work and life experiences. Students may use the Internet to download instructional materials and then interact through e-mail. Also, they may meet at a fixed time for interaction through videoconferencing. In both cases the tutor facilitates the interaction. Online libraries and telephone counselling are in place for regular interaction, and the local centres provide for skills assessment, besides e-assessment.

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**Telelearning centres of IGNOU**

The Indira Gandhi National Open University, India (IGNOU) has initiated a different version of a virtual campus. It offers a Bachelor of Information Technology with options for a Higher National Diploma in Computing and a Higher National Diploma in Computing and Multimedia. For student support, telelearning centres have been established using these teaching and support methodologies:

- Live satellite-based teleconferencing lectures supported through CD-ROM
- Recorded video lectures
- Practical laboratories
- Computer-based training/tutorials
- Internet learning resource by Internet browsing
- Online interactive chat with peer groups, faculty and experts through fax, e-mail and telephone

(Panda and Chaudhary, 2001)

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# CONCLUSION

There are a variety of approaches that have been successfully used to provide student support in TVET programmes through distance education. No single approach is sufficient to meet varying demands of students and industry. The student support mechanisms have to provide for cognitive as well as psychomotor and attitudinal aspects of learning in TVET programmes. What mode is used by an institution depends on a number of factors including financial and human resources. The technology available to distance education has the potential of providing quality student support required for delivering TVET programmes and has been successfully used by many distance education institutions. The cost of technology can, however, be a constraint on some systems. Innovative and alternative ways will have to be explored. Oliveira and Rumble (1992) have suggested the following alternatives:

- Fees could be increased to cover costs, or systems will have to be developed in which costs are borne by students.

- Student support technologies could be provided by organisations or companies seeking training rather than by the open and distance education institutions.

These options are available only in countries where students can afford such investments or where organisations and companies are supporting employees for upgrading or acquiring new skills. It is common for large companies to be willing to make such investments in their staff, but small and medium enterprises (SMEs) are unable to. In order to achieve the desired confidence of industry to the quality of TVET programmes through distance education, effective institution-industry partnerships are essential. Industry must be involved in carrying out labour market analysis and designing and delivering the curriculum, including the assessment of students.

Another set of people requiring training and upgrading of skills are those working in the informal sector. Upgrading skills can increase not only their earning capacity but the quality of goods and services provided by them. Since the informal sector is unorganised, it is also unable to make the investment required to enhance their mobility. To meet the demand of education and training of such people, the model of the study centre being followed in Germany, Spain and South Africa may be a suitable option. These centres will not only meet the education and training needs of the unorganised sector but other people who cannot invest in their education and training.

# ACKNOWLEDGEMENTS

# REFERENCES

Bates, A.W. *Technology, Open Learning and Distance Education*. London: Routledge, 1995.

Carmichael, J. "Voice Mail and Telephone: A New Student Support Strategy in the Teaching of Law by Distance Education." *Distance Education*, 16, no. 1 (1995): 7-22.

Leach, J. "Learning in Practice: Support for Professional Development." In Supporting *Students in Open and Distance Learning*. London: Kogan Page, 2000.

Mills, R. "The Role of Study Centres in Open and Distance Education: A Glimpse of the Future." In *Supporting Students in Open and Distance Learning*. London: Kogan Page, 2000.

Oliveira, J. and G. Rumble. "The Future of Vocational Education at A Distance." In *Vocational Education at A Distance: International Perspective*. London: Kogan Page and International Labour Office, 1992.

Panda, S. and T. Jena. "Changing the Pattern: Towards Flexible Learning, Learner Support and Mentoring." In *Innovations in Open and Distance Learning*. London: Kogan Page, 2000.

Panda, S. and S. Chaudhary. "Telelearning and Telelearning Centres in India." In *Telecentres: Case Studies and Key Issues*. Vancouver: The Commonwealth of Learning, 2001.

Reid, J. "Managing Learner Support." In *Open and Distance Learning Today*. London: Routledge, 1998.

Rumble, G. "Student Support in Distance Education in the 21st Century: Learning from Service Management." *Distance Education*, 21 no. 2 (2000): 216-235.

Scott, C., A. Burns, and G. Cooney. "Motivation for Return to Study as A Predictor of Completion of Degree amongst Female Mature Students with Children." *Higher Education*, 35 (1998): 221-239.

Simpson, O. *Supporting Students in Open and Distance Learning*. London: Kogan Page, 2000.

Tait, A. "Planning Student Support for Open and Distance Learning." *Open Learning*, 15, no.3 (2000): 287-299.

Wright, S. "Supporting Learners in the Workplace." In *Open and Distance Learning for Nurses*. London: Longman, 1989.

# CHAPTER 7

# DELIVERING THE PROGRAMME

*Carol Hampton and John Bartram*

If access to technical and vocational education and training (TVET) is to increase, new ways of developing and delivering courses must be explored. TVET must be taken outside of the classroom and into the communities, the workplaces and the homes of the students. Traditional ways of thinking about TVET must be put aside and different ways of packaging and delivering knowledge and skills must be developed. This is particularly critical in meeting the demands of countries with depressed economies and countries where people are separated by water (as in island states), by terrain or by distance.

## DIFFERENT APPROACHES

Different approaches to learning allow learners a greater say in what, where, how and when they study (see Figure 7.1). These flexible approaches are based on some form of open and distance learning (ODL) methodology which allows learners to study from home, work or a community facility. This off-campus approach is fully supported with materials and contact with a resource person, and may include the following components:

- *Self-paced learning packages*, which are interactive written materials enabling learners to work individually at their own pace. These packages are often supplemented with audio or videotapes and CD-ROMs. They may be used on or off campus.

- *Mixed-mode study*, which involves the above approach combined with workshops, tutorials and other structured activities.

- *Online delivery*, which provides computer-based learning materials via the Internet. This technology also allows the learner to interact with other students and staff through the use of e-mail and computer chat sessions.

- *Videoconferencing*, which allows learners to attend a convenient and suitably equipped location and participate in a class at another location. This reduces the time and resources that the learner may need to commit in travelling to classes.

- *Audioconferencing*, which uses the telephone as the basis for communicating with learning. This is usually used in conjunction with self-paced materials.

By repackaging knowledge and skills, using print-based learning materials supported by audio, video and CD-ROM or by on-line delivery, we move outside of the traditional mode of delivery, which has severely constrained access to TVET for a number of years.

*Figure 7.1: Flexible delivery options*



## ADOPTION OF TECHNOLOGY

Those who develop trade-based programmes face the dilemma of finding efficient ways of teaching their learners. Teaching practical skills is an essential component in many of the traditional trade areas, and it has generally occurred by demonstrating these skills to the learners by an experienced lecturer in a workshop setting. New approaches are slowly emerging.

### *Online learning*

Embracing information and communication technology (ICT) provides yet another model for learning. Online learning is being promoted in almost every educational system in the western world. By utilising the Internet, students can study anywhere, anytime provided they can log on to a computer that is connected to the World Wide Web. Within the educational sector this phenomenon is attracting huge attention, and millions of dollars are being spent developing suitable resources. There are, of course, some real benefits and major considerations to think about before adopting this approach.

The cost and reliability of the infrastructure are critical factors. Computers simply become consumables within the budget needing to be replaced every 18 months to two years. An unreliable service is very frustrating for learners and can result in many of them leaving the programme discontented. Developing specific online material is extremely costly and the staff development is very time intensive. The rate of development in this field is massive with new supporting software, systems and associated skills turning over in increasingly rapid lifecycles.

Research now indicates that online learning may not be quite as big as first thought, recognising that it is not always the most suitable approach to learning and that a blended approach may be more realistic. E-learning has its place within the range of options available. Its limitations include difficulties with streaming audio and video; with less than optimum infrastructure and slower computers, content looks very much like text on the screen. It has been documented that learners read 25% slower from the screen than from print-based materials, so text on screen is a poor substitute. Additionally it can be very expensive for learners if they are required to print materials from within their package or connect to the Internet through an Internet service provider (ISP) sometimes at very high payment rates.

## *Using CD-ROM technology*

Another pilot programme has had extremely good results using interactive CD-ROMs. (See the case study below from the Onkaparinga Institute of Technical and Further Education.) This approach produced the following benefits:

- **Benefits to the employer**
  - Decreased time taken to complete the units of up to 50% over traditional methodology
  - Decreased time the learner is away from the business
  - Greater flexibility in the times when apprentices may attend for practical skills training

- **Benefits to the learners**
  - Learners work through the learning materials at their own pace
  - Increased learning effectiveness
  - An increase of 20% in the successful completion rate
  - Learners who are sick or who miss a section can easily catch up using the learning materials at home or work
  - Learners can repeat a section many times if they find a concept or practice difficult to grasp
  - More leraners can access the tutorial materials

## Training for transport engineering in South Australia

Onkaparinga Institute of TAFE in South Australia provides training for Transport Engineering — Heavy Vehicles apprentices for the entire state. The apprentices attend workshop and classroom-based training full time for two-week blocks four times throughout the year. Many of the apprentices travel over 500 kilometres to attend their training.

In 1997 the staff commenced developing interactive CD-ROMs to make good use of the advances in educational technology and multimedia. They integrated the practical and theory components of the curriculum and provided built-in tutorial materials with 47 units of study now developed for modules in the Certificate 3 in Automotive Heavy Vehicles for the three strands:

- Earthmoving and Industrial Mechanic
- Agricultural Mechanic
- Road Transport Mechanic

The learning materials integrate text, audio, graphics, video, animations and learning activities. If connected to the Internet, the students can access the Heavy Vehicles Web site, e-mail their lecturer directly and link to other resources available on the World Wide Web. Resources have been developed for a target audience who prefers not to read, but relates well to diagrams, photographs and video. To this end, the educational design uses minimum text and clear step-by-step procedures with graphics and animation.

The staff has faced the many challenges of implementing the materials to increase flexibility and productivity. The team commenced their pilot with just six computers. To minimise the outlay on technology, students work in pairs. Students benefit by sharing the problem-solving and enjoying the social interaction within the learning environment.

Computer literacy was identified as an issue for nearly half the students in the initial programme. However, the user-friendly interface design was welcomed by the students, and any nervousness about the computers was quickly and easily overcome. Concerns that the computers themselves would be ruined in the workshop environment have also proved to be unfounded.

Practices and procedures at the institute have had to adapt to the new approach in many ways. Students are now being called up in a much more flexible way to allow for the varying time taken to complete the modules instead of coming strictly in two-week periods on block release.

These learning materials are being used across the network and on stand-alone machines in the workshop with some modules now being used for training in industry settings. The computers are situated at the end of the workbench and simply direct the students through their activities.

- **Benefits to the training provider**
  - An increase of 20% in the results achieved
  - Lecturers are freed up to spend more time with students who need additional help
  - Less equipment is required (Given the varying speed of learners and increased flexibility as the learning isn't teacher driven, several units will be running concurrently.)

## *Flexible learning — anywhere, any place, any time*

There are many areas of training within the scope of TVET that can be offered anywhere, any place, any time. Courses can be developed to meet the particular needs of the target group of students and then delivered to those students in a way that meets their cultural needs, at a time and place that suits the demands of their lifestyles. Often ways can be found to overcome remoteness, low levels of literacy and lack of access to traditional educational facilities. This requires a creative approach, an assessment of the available resources and an ability to harness these resources.

The following case study on small enterprise training is an example in which there was an identified need to develop better business skills. The barriers were remoteness, low levels of literacy, no electricity and no educational infrastructure. The resources were some creative people who were prepared to give some time and energy to this matter, supportive non-governmental organisations (NGOs) and a highly motivated learner group. In addition, the learners had to manage the constraints of looking after their families as well as tending to small enterprises in order to access learning.

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**Small enterprise training for rural women**

A project was mounted through the Bangladesh Open University to improve the entrepreneurial and business skills of rural women. It was developed in such a way that people with no literacy skills were not disadvantaged.

The development team settled on the use of a tutor-led community learning group. Materials were developed which were visual or used audio and videotapes. A tutor guide was also produced. Female leaders were identified from communities and were trained in the use of the materials. The leaders then worked with groups of up to 20 women in their communities, leading them through the modules in the course.

The tutors negotiated with the women to determine where and when the meetings would be held. To attract women into the course, it had to be delivered at a place that was not too far from their homes, and at a time that allowed them to carry out their normal activities. Most groups assembled on grass mats spread on the ground in front of the hut of one of the participants. Most tutors held sessions twice a week in the mid-afternoon.

At the conclusion of the course, all women who had participated in the full course were awarded a Certificate of Participation, which provided documentation that could be presented to Grammeen Bank and other NGOs to access micro-economic loans to establish small enterprises.

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## Access through learning centres

The development of learning centres is important to increase access to TVET. A community can benefit by supporting a joint educational facility that supports a range of learning outcomes. This may result in a primary and secondary school, TVET Institute and university combining resources with a local government body to jointly fund a local facility for extended hours of use. In some examples local industries also access the technological infrastructure on a fee-for-service basis to support their own enterprise or small business. This has been particularly successful in close-knit remote rural communities. A co-ordinator facilitates the learning across all sectors and oversees the maintenance and upgrades as necessary.

The use of telecentres as learning centres which use appropriate technology to increase access to education is well described in the COL publication *Telecentres: Case studies and key issues* (Commonwealth of Learning, 2001). The case study below on the Pinnaroo Learning Centre is also helpful.

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### Learning in Pinnaroo

The Pinnaroo Learning Centre is located in the South Australia, approximately three-and-a-half hours' drive from the nearest city. The population in the region is very sparse with only 0.3 people per square kilometre. A joint facility has been developed on the school grounds and is managed by a regional co-ordinator who is funded by both the local council and the TVET institute. The adult learners access the existing school facilities by negotiation, and the videoconferencing facility and computer suite provided by the Onkaparinga Institute of TAFE are accessed by the school students when not being used by adult learners.

A joint submission for funding from the Australian government enables a telecentre to co-exist as a network hub for access to the Internet. Local residents make use of the facility; for example a local nurse is completing her university studies at the centre. A number of examinations are invigilated at the centre on behalf of universities whose part-time distance education students capitalise on the facility. The facility is also a very valuable resource for the community; a number of small businesses access the technology to support their enterprises.

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## Workplace training

Another model gaining wide acceptance is that of workplace training, where training is modelled around existing work activities and related problems. This may involve complex activities and learning a wide range of knowledge and practical skills that relate to the activity, but not frequently associated in a single module of study. Again this requires partnerships within industry or commercial businesses. It may be supported by workplace trainers and assessors or managed by supervisors with customised resources developed by educational staff. This approach is extremely valuable for shift workers who have traditionally been denied training opportunities.

- **Benefits to the employer**
  - Staff do not have to leave the workplace to learn, reducing travel costs and inconvenience
  - Staff undertake the study at times convenient to the business
  - Training is easily customised to suit the needs of the particular company
- **Benefits to the learners**
  - A culture of lifelong learning is established within the industry
  - Learners uses the industry-standard equipment and specialty equipment required in their workplace
  - Learners are supported by work colleagues and an educational expert
  - Lecturer may be only a phone call away and checks in regularly
  - Excellent learning materials are available
- **Benefits to the training organisation**
  - Reduced infrastructure required
  - Reduced direct input from the teacher
  - Partnerships with industry enable access to all necessary equipment for video development without capital outlay
  - Greater access to learners as geography is no longer a barrier
  - Processes for managing learners and learning are streamlined
  - Material costs and maintenance budgets are diminished

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### Skilled training in the leather industry

The Government of India identified the need to upgrade skills in tannery workers to propel the Indian leather industry into the 21st century. The formal education system was unable to meet this need for several reasons: the target group was in the workforce, the numbers to be trained were very large (1.4 million), the areas to be trained were not covered by formal systems, learners were distributed geographically through various tanneries in the country, each tannery had needs specific to local requirements, educational background of learners varied drastically from graduate to illiterate and tanneries found it difficult to spare workers for training.

The Indira Gandhi National Open University (IGNOU) developed a course which was competency- and workplace-based and which used ODL methodologies. Strong partnerships were established between the experts in open learning and materials development and experts in the leather industry to implement the programme. In order to cater for the range of varied educational backgrounds including range of languages, the entire course was produced in both print and on audiotape.

The delivery system provided support through work-based demonstration and training at the worker's tannery, supplementary support through study centres located either in the tannery and general guidance and assistance through partnering institutes located in the community.

## *Work experience*

Another approach to learning practical skills is a work experience programme. Again this relies on partnerships with industry or enterprises, but it allows individuals to assess their potential to meet the requirements of a particular job or role. Work experience programmes are used extensively in senior secondary or general vocational courses to assist learners to decide on a stream for their vocation. It allows them to work, for no monetary benefits for an agreed time, usually one week, to gain a fuller understanding of the range of skills and personal attributes required for the position. During this time some training occurs, covering basic practical skills. This is a more general approach and rarely links to formal skill assessment, but it does generate skills that may then be recognised within a future training programme.

## CONCLUSION

Mixed-mode or a blended approach to learning is gaining wide acceptance within TVET. The trend to integrate differing approaches to suit the needs of the learners and increase their access to TVET is critical. It is important that this learner-centred culture is established within the TVET sector. Flexible approaches to delivering learning must be an integral part of the educational infrastructure, not an optional extra. Not only does this approach require different strategies for implementation and the deployment of significantly different policies and practices across entire systems and within TVET organisations, it requires different relationships with the learners.

Consideration of the availability of learning materials, existing or accessible infrastructure and trained human resources to support the learning are all vital in re-engineering approaches to educational delivery. Alongside this is the very real need to ensure TVET staff are aware of the changing approach and to support the implementation of new strategies with suitable professional development.

# CHAPTER 8

# INSTRUCTIONAL DESIGN

*Dermot Moore, Annemarie Bates and Jean Grundling*

## INTRODUCTION

Many countries worldwide are seeking improved ways of educating their people midst organising their education and training systems in order to participate in an increasingly competitive global economy. Designing effective instructional materials is one way of improving the quality of educational opportunities. Instructional design can be regarded as both a science and an art: a *science* because it is rooted in learning theories which in turn draw their principles from psychology, sociology, philosophy and education; and an *art* because the designing of instructional materials is a highly creative process. It is, therefore, understandable that no two designers will design learning materials in exactly the same way. The common concern of instructional designers, though, is the facilitation of successful learning experiences from which learners can demonstrate their newly acquired knowledge, skills and attitudes.

The concept of instructional design has been described in many different ways, but in essence, it consists of solving instructional problems by systematically analysing the conditions of learning and designing a satisfying learning experience based on this analysis. Therefore, instructional design refers to the systematic process of translating principles of learning and instruction into plans or specifications for instructional materials or activities. These plans are based on principles that have been successful in the past, namely learning theories. Instructional designers design learning materials that are functional as well as attractive or appealing to the users of the product. Furthermore, instructional designers use established learning theories and principles as problem-solving procedures (models) to guide them in making decisions about their designs (Smith and Ragan, 1999).

It is clear that designing and developing instructional materials is a thorough and complex process aimed at solving particular instructional and learning problems. Instructional designers address three fundamental concerns, namely:

- *Goals:* What are the goals of the instruction? (*Where are we going?*)

- *Instructional strategy:* What is the instructional strategy and the instructional medium? (*How will we get there?*)

- *Evaluation:* How will we evaluate and revise the instructional materials for future improvement? (*How will we know when we have arrived?*) (Smith and Ragan, 1999)

## BACKGROUND AND NEED FOR INSTRUCTIONAL DESIGN

Instructional design, and also instructional systems design (ISD), is not a totally new concept. Its origins can be found in numerous earlier efforts to improve instruction. It has even been suggested that its roots can be traced to the early Greek philosophers.

Over the years, numerous experts in the fields of education and psychology have made significant contributions to the science of instructional design. Instructional designers today consider the work of E.L. Thorndike, who introduced his instructional strategies in 1913, as very valuable. Thereafter, in 1924, Bobbitt introduced his work on job analysis, and Tyler followed in 1942 with his work on objectives and criterion-referenced testing (Briggs et al., 1991). During World War II, the US Military made extensive use of technological devices for training. During the 1960s, the focus turned to work on systematic application of behavioural psychology to the design of instruction (e.g., Skinner) with particular emphasis on self-paced individual interaction.

From 1965 to the early 1990s, behaviourist thinking gradually gave way to cognitive psychology and constructivist theory. The emphasis was on new forms of assessment as well as on instructional systems development, the steps of instruction and the elaboration of the theory of instruction. J.S. Bruner, R.M. Gagné and C.M. Reigeluth made valuable contributions to this field. The design of sophisticated simulators such as those used by astronauts, and the introduction of flexible and powerful microcomputers and related devices also influenced the approach of designing effective learning materials. During the time of these developments, countries and communities experienced a growing knowledge of how formal and private organisations operate and change, with an increasing focus on the need to train a skilled workforce.

To date, instructional design has been most extensively applied in military, aerospace, business and industry training. A dramatic example of the application of ISD on a national scale was its use to completely revise the elementary and middle school education of the Republic of Korea during the 1980s. At the time the results contributed significantly to the rise of Korea as an economic power.

The need for instructional design thus becomes clear as it plays a very important role in the learning experience and addresses aspects such as the growing demand for a skilled workforce, access to learning opportunities, outcomes-based teaching and learning and portability of skills between different fields of study. This, in turn, has lead to the development of more sophisticated learning materials and resources, which implies that teaching and learning material should be pre-planned, pre-recorded and pre-packaged.

## MODELS OF INSTRUCTIONAL DESIGN

The different approaches to instructional design are nowhere more obvious than in the ever-growing list of models. Gropper (1977) has provided an analysis of instructional design models used in higher education environments. Extending Gropper's list, Andrews and Goodson (1980) analysed 40 models and concluded that instructional design models can serve the following purposes:

- Improving learning and instruction by following a systematic approach
- Improving management of instructional design and development procedures by monitoring and controlling the functions of the systematic approach

- Improving evaluation processes (including learner performance)
- Testing or building learning or instructional theory by means of theory-based design within a systematic instructional model

Despite the vast number of different models recorded in the literature, there are some basic elements reflected in most of the various approaches. These basic elements include the following actions:

- Determining the needs of the learners and examining the learning context and environment
- Determining the outcomes of the learning programme or course and formulating the learning objectives
- Developing appropriate and meaningful assessment criteria and procedures
- Establishing the most effective approach(es) to delivering the instruction
- Testing and evaluating the effectiveness of the instructional system (both the instruction itself and the performance of the learner)
- Implementing, adjusting and maintaining the instructional system

We focus here on the models of Dick and Carey (1990) and of Smith and Ragan (1999). See Figures 8.1 and 8.2.

The Dick and Carey model (Figure 8.1) uses a systems approach in designing learning and instructional material. The model consists of various steps, starting with identifying the goals and analysing the needs of the potential learners. Thereafter performance or learning objectives are formulated. These objectives play a very important role in the rest of the process as the development of criterion-referenced test items, the instructional strategy and selecting appropriate delivery methods are based on these objectives. All these steps are integrated and continually revised. The interrelationships and revisions are indicated with dotted lines in Figure 8.1.

In their model (Figure 8.2), Smith and Ragan focus on three main areas:
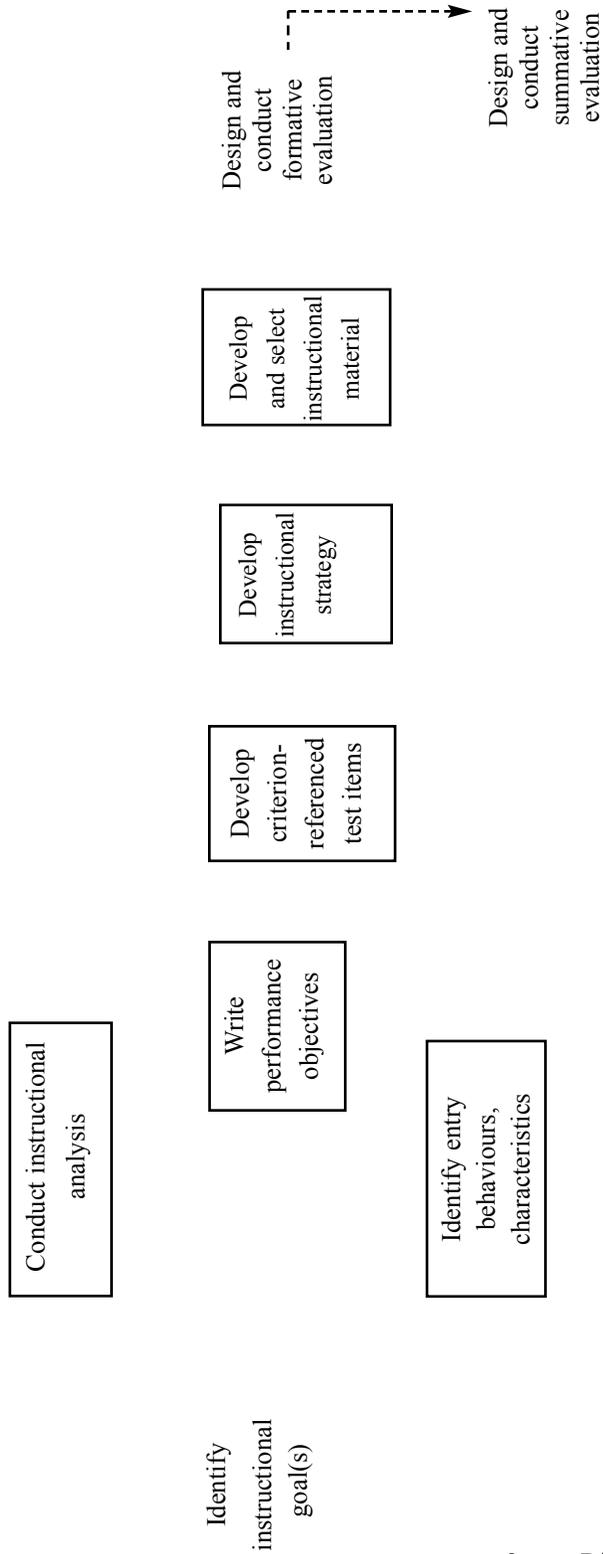
- *Analysing* the learning context, the needs of the learners and the learning tasks or goals
- Formulating a *strategy* in which organising, delivery and management aspects are addressed, which then serves as the basis for writing and producing the instructional materials
- *Evaluating* the materials once they are produced and, if necessary, revising them for future use

All the steps in the model are also integrated and continually revised in order to make changes proactively. Arrows in the model (see Figure 8.2) indicate the integration and revision.

Both models (and numerous others recorded in the literature), focus on the core elements of *analysis, design, development and evaluation*. These phases and processes are illustrated in Figure 8.3.
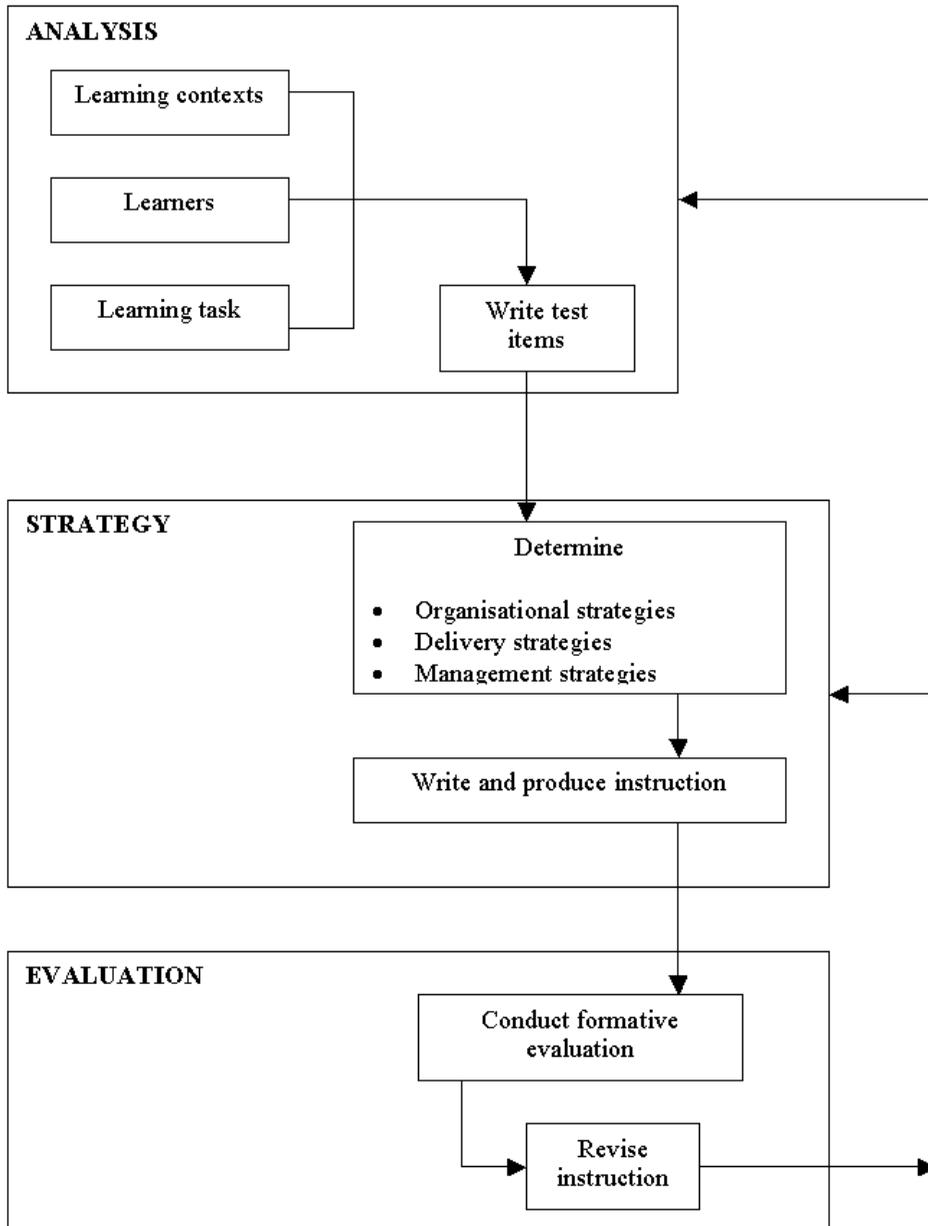
*Figure 8.1: Dick and Carey model*

**Revised Instruction**

Design and conduct formative evaluation

Design and conduct summative evaluation

Develop and select instructional material

Develop instructional strategy

Develop criterion-referenced test items

Conduct instructional analysis

Write performance objectives

Identify entry behaviours, characteristics

Identify instructional goal(s)

*Source: Dick and Carey, 1999*

*Figure 8.2: Smith and Ragan model*

**ANALYSIS**

Learning contexts

Learners

Learning task

Write test items

**STRATEGY**

Determine

- Organisational strategies
- Delivery strategies
- Management strategies

Write and produce instruction

**EVALUATION**

Conduct formative evaluation

Revise instruction

*Source: Smith and Ragan, 1999*

**QUALITY ASSURANCE**

| ANALYSIS | DESIGN | DEVELOPMENT | EVALUATION |
|---|---|---|---|
| Context | Instructional strategy | Materials development | Summative evaluation |
| • *Learners* | Evaluation strategy | Implementation | Review and maintenance |
| • *Training gap* | • *What?* | • *Formative evaluation* | |
| • *Resources* | • *Why?* | • *Review for improvement* | |
| • *Facilitators* | • *How?* | | |
| | • *Who?* | | |
| | • *When?* | | |

**REVISION**

At this stage it is important to emphasise that every designing task has unique challenges and different contexts that call for creativity and a problem-solving approach. All designers agree that effective planning is of utmost importance in delivering learning materials that would successfully address the training needs and requirements of clients. Although models can be very useful in guiding designers, this work demands that designers apply sound scientific principles based on knowledge and theory from the fields of psychology, education, communications and technology, as well as creative skills. Designing learning materials is therefore not a process of simply following the prescriptive steps captured in neatly recorded models. The greatest aspect of this work is that it is fundamentally about people and innovation and thus cannot be fully reflected in models. Design models, therefore, can be regarded as problem-solving procedures to guide designers in making decisions about their designs.

Each of the phases illustrated in Figure 8.3 is driven by questions regarding aspects such as the context in which the learning should take place, the stakeholders, the learners, relevant legislation, the training needs, the training gap, the learning outcomes, the facilitators, the delivery methods, the assessment methods, how the effectiveness of the learning programme will be measured and so forth. Answers to these questions form the basis for decision-making on designs. Against this background, designers need to apply a set of highly integrated competencies including extracting, analysing, synthesising and organising information in order to ensure that the learning programme will result in improved practice.

## *Analysis*

There is usually a great deal of uncertainty at the start of designing and developing learning programmes or instructional materials. The designer's job is to collect all relevant information and then to make sense of a variety of contradictions, inconsistencies and ambiguities. During this phase, sometimes referred to as front-end

analysis, the designer will analyse information on, for example, the performance requirements of the job for which the training programme or instructional materials are aimed at. The designer will also collect and analyse information on the context in which the learning will take place, the learners' characteristics, the learning outcomes and how learners will be assessed on newly acquired knowledge and competencies.

To collect and analyse all relevant information, designers will consult and interview a wide range of stakeholders such as members from the industry, subject matter experts, and learners who have completed a training course and even potential learners. As stated before, every design project has its unique challenges, and these will guide designers in collecting and analysing the information that is relevant to that situation. One cannot design a solution to a learning and training problem until the problem is correctly identified; that is, a designer needs to be clear on the training needs in order to design a learning or training programme that would improve current practice.

## *Design*

Information from the analysis phase provides the basis for the design phase. This phase is strongly supported by research findings from the fields of psychology, communications, education and technology. In other words, designers need a sound knowledge of learning and instructional theory in order to translate the results from the analysis phase into specifications for the design.

These specifications are recorded in documents, sometimes referred to as a blueprint, and contains solutions to questions such as:

- What is the purpose of the instructional programme and materials?
- What are the learning outcomes and objectives?
- How will we assess the learners' newly acquired knowledge and competencies?
- What content matter should be taught?
- What teaching and learning strategies can we implement to achieve the set outcomes and objectives?
- What delivery systems will best suit the training needs and characteristics of the target audience?
- What strategy will we implement to evaluate the effect and effectiveness of the instructional programme and materials?

It is important to bear in mind that the purpose of designing instructional programmes and materials is to improve competencies and performance in real-life settings. Therefore, the design specifications (instructional strategy and evaluation strategy, or blueprint) should include instructional methods, strategies and media that would be most effective for the types of learning involved and the characteristics of the target audience. During this phase designers also need to address practical issues such as availability of resources, staffing needs for the development of materials and programmes and cost-effectiveness.

This planning document, or blueprint, forms the foundation for the subsequent development of the materials. As new information becomes available or certain conditions of the learning context change, the details of the plan may be adjusted to ensure that the specifications still match the requirements.

## Development and implementation

The development phase entails the process of authoring, reviewing, producing and validating the learning materials. For some projects the work of the designer ends once the planning phase has been completed. However, most designers are usually involved in all the phases. It is true that the development and production process often takes longer than the design activities. The danger is that, as time passes, the original intent may be misinterpreted. It therefore remains the designer's responsibility to ensure that the planned specifications and objectives are consistently met. As new or more information becomes available, it is quite possible that the original specifications should be adjusted to accommodate new requirements as these adjustments are usually improvements. However, production changes as well as aesthetic changes must be consistent with the instructional intent to ensure that quality will be maintained throughout the ISD stages.

Depending on the design specifications, designers may work in project teams with authors, subject matter experts, editors, language practitioners, graphic designers, artists, film/video or other media producers, book designers and desktop publishers. It would thus be very appropriate to link instructional design procedures with project management principles. Not only does one need to manage the activities of the various role-players and specialists, but also many different kinds of outputs, for example, concept proposals, analysis reports, instructional design specifications, schedules and formative testing data. Furthermore, each of these outputs must be properly timed and costed.

The validation involves a process of formative evaluation, which entails collecting and interpreting people's opinions on the learning programme and instructional materials. In this phase, designers would most probably deal with questions such as:

- How do learners respond to the learning experience?
- How effectively do the materials teach?
- What are the results of the learning programme?
- What unexpected problems arose?
- What needs to be changed?

During the initial stages of implementation, users of the instructional material may experience some problems. Designers should therefore also develop guiding materials for administrators and facilitators of such new courses. Also, during the early stages of implementing new instructional materials, users may need a great deal of support to gain skills in how the changed version of a learning programme works. However, the need for support decreases as users become familiar with the improved way of doing things.

## Evaluation

Once the final product has been produced and learners use the learning materials, the evaluation at this stage is referred to as summative. Formative evaluation is intended to identify and correct shortcomings in the learning materials in the development phase. Summative evaluation, on the other hand, is intended to assist clients to establish the impact of the new materials and how well the instructional problem was solved, as well as the value of the solution to the institution or organisation.

Summative evaluation should ideally be carried out after the new learning materials have been implemented and users are familiar in using the materials in an effective

manner. This process can be very complex, costly and time-consuming depending on the nature of the project. Often, independent evaluators are called upon to conduct the summative evaluation to ensure objectivity, and not the designer who was closely involved in all the design and development stages of the final product. Evaluators are concerned with issues such as:

- What is the impact of the new learning materials on the institution/organisation?
- How are grades and graduation rates or job performances affected?
- Are the learning objectives relevant?
- Are the materials being used correctly?
- Is the course content relevant?
- What aspects need to be changed or updated?

## THE BENEFITS OF INSTRUCTIONAL DESIGN

As pointed out in the Introduction, the task of an instructional designer is to facilitate learning so that learners are able to apply their newly acquired knowledge, skills and attitudes in a range of situations. The systematic and sound application of learning theories and principles to produce functional learning materials fundamentally supports a learner-centred and outcomes-based approach. In this way learners are expected to demonstrate improved job performances or graduation rates.

The main advantage of instructional systems design (ISD) is that it is a systematic decision-making process of finding a solution to an instructional problem. The ISD approach brings about innovations that can translate learning problems into instructional plans so that the quality of the instruction is assured. ISD focuses on achieving set learning outcomes and, therefore, the instructional objectives show all stakeholders (e.g., learners, learning facilitators, administrators, employers and parents) what the intentions of the learning materials are. Performance standards and assessment criteria provide a means of determining whether or not those outcomes have been met. Clients and users can thus trust the effectiveness of the instruction, because all aspects that would influence the design are considered and the final version of the learning materials has been revised and tried out until the learning outcomes are met.

Other benefits of ISD include:
- Assisting in the planning, co-ordination and management of the various tasks, the different role-players, the different outputs, the timing and costing of such projects; in other words ISD supports project management
- Promoting effective, efficient and appealing instruction
- Promoting learner-involvement and motivation

## CONCLUSION

Often, the instructional systems design process may be portrayed as linear. In practice, however, it is frequently iterative, moving backwards and forwards between the activities as the project develops.

While ISD is intended to provide the external conditions for learning, the "learning" still remains the responsibility of the learner. In other words, the designer can select and arrange certain external conditions to assist in the internal learning process. The

designer's function, therefore, is to plan the learning experiences that results in changing current behaviour, performance and cognition to some new, as yet unlearned, behaviour and mental processing in order to achieve set learning outcomes.

Furthermore, one also needs to bear in mind that not all learning is the result of deliberate instruction. Social behaviour and emotional learning, for example, are learned from sources such as parents, other adults, peers and the media. Experiences from daily life situations constantly shape and mold our attitudes and behaviour.

## REFERENCES

Andrews, D. and L. Goodson. "A Comparative Analysis of Models of Instructional Design." *Journal of Instructional Development*, 3, No. 4 (1980) 2-16.

Atkinson, R, C. McBeath, and D. Meacham. *Quality in Distance Education*. Bathurst: Australian and South Pacific External Studies Association, 1991.

Braden, R.A. "The Case for Linear Instructional Design and Development: A Commentary on Models, Challenges and Myths." *Educational Technology*, March-April (1996).

Briggs, L.J., K.L. Gustafson, and M.H. Tillman. *Instructional Design: Principles and Applications*. 2nd ed. New Jersey: Educational Technology Publications, Inc., 1991.

Bruner, J.S. *Toward a Theory of Instruction*. Cambridge: Harvard University Press, 1966.

Calder, J. *Programme Evaluation and Quality*. London: Kogan Page, 1994.

"Courseware Design and Development" (Products and Services brochure). Florida: Technikon SA, 1999.

Dick, W. and W. Carey. *Systematic Design of Instruction*. 3rd ed. Glenview, IL: Harper Collins, 1990.

Dijkstra, S., N. Seel, F. Schott, and R.D. Tennyson. *Instructional Design; International Perspectives, Vol. 2: Solving Instructional Design Problems*. New Jersey: Lawrence Erlbaum Associates, 1997.

Evans, T. and D. Murphy. *Research in Distance Education*. Geelong: Deakin University, 1993.

Evans, T. and D. Nation. *Reforming Open and Distance Education*. London: Kogan Page, 1993.

Gagné, E.D., C.W. Yekovich, and R.R. Yekovich. *The Cognitive Psychology of School Learning*. 2nd ed. New York: HarperCollins, 1993.

Gagné, R.M. *The Conditions of Learning*. 4th ed. New York: Holt, Rinehart & Winston, 1983.

———. *Essentials of Learning for Instruction*. New York: Dryden Press, 1974.

———. "Learning Outcomes and Their Effects: Useful categories of human performance." *American Psychologist*, 39 (1984), 377-385.

Gagné, R.M., L.J. Briggs, and W. Wager. *Principles of Instructional Design*. 4th ed. Fort Worth: Harcourt Brace College Publishers, 1992.

Gagné, R.M., and W. Dick. "Instructional Psychology." Annual Review of Psychology, 34 (1983), 261-295.

Gagné, R.M. and M.P. Driscoll. *Essentials of Learning for Instruction*. 2nd ed. New Jersey: Prentice-Hall, 1988.

Gropper, G.L. "On Gaining Acceptance for Instructional Design in A University Setting." Education/Technology, 17 (1977), 7-12.

Johnson, K.A. and L.J. Foa. *Instructional Design: Alternatives for Effective Education and Training*. New York: American Council on Education and Macmillan Publishing Company, 1989.

Kember, D. and D. Murphy. *Interesting Activities for Open Learning Courses*. Wiltshire: The Cromwell Press, 1994.

Kemp, J.E. and D.C. Smellie., *Planning, Producing and Using Instructional Media*. New York: Harper & Row, 1989.

Leshin, C.B., J. Pollock, and M. Reigeluth., *Instructional Design Strategies and Tactics*. New Jersey: Educational Technology Publications, 1992.

Lockwood, F., ed. *Materials Production in Open and Distance Learning*. London: Paul Chapman Publishing, 1994.

Lockwood, F. *Activities in Self-Instructional Texts*. London: Kogan Page, 1992.

———. *Materials Production in Open and Distance Learning*. London: Paul Chapman Publishing Ltd., 1994.

———. *Open and Distance Learning Today*. London: Routledge, 1995.

Lowe, R. *Successful Instructional Diagrams*. London: Kogan Page, 1993.

McBeath, R.J. *Instructing and Evaluating in Higher Education: A Guidebook for Planning Learning Outcomes*. New Jersey: Educational Technology Publications, 1992.

Murphy, D. *Instructional Design for Self-Learning in Distance Education*. 2000. *<www.col.org/knowledge/ks_instrdesign.htm>* (21 January 2002).

Nadler, L. and Z. Nadler. *Designing Training Programs — The Critical Events Model*. Houston: Gulf Publishing Company, 1994.

Race, P. *The Open Learning Handbook*. London: Kogan Page, 1994.

Reigeluth, C. M., ed. *Instructional Design Theories and Models*. New Jersey: Erlbaum, 1983.

———. *Instructional Theories in Action*. New Jersey: Erlbaum,1987.

Rowntree, D. *Teaching Through Self-Instruction: How to Develop Open Learning Materials*. Rev. ed. London: Kogan Page, 1990.

———. *Preparing Materials for Open, Distance, and Flexible Learning: An action guide for teachers and trainers*. London: Kogan Page, 1994.

Seels, B. and Z. Glasgow. *Exercises in Instructional Design*. New Jersey: Charles Merrill, 1990.

———. *Making Instructional Design Decisions*. 2nd ed. New Jersey: Prentice-Hall, 1998.

Smith, P.L. and T.J. Ragan. *Instructional Design*. New York: Macmillan Publishing Company, 1999.

Thorndike, E.L. *Educational Psychology: Vol. II. The Psychology of Learning*. New York: Columbia College, 1913.

# CHAPTER 9

# TEACHING PRACTICAL SKILLS

*Carol Hampton*

## INTRODUCTION

Teaching practical skills is very different from teaching knowledge or theory and it requires some special considerations. Within an educational institution, the learning of practical skills is most often associated with workshops and laboratories, specialist materials and equipment, smaller class sizes and, frequently, longer blocks of time for practice or rehearsal. For the open and distance learning (ODL) environment, the teaching of practical skills poses considerably more difficulties than the teaching of knowledge and theory.

The first question asked by the teacher who faces the challenge of teaching practical skills via ODL is "How do I do it?" This chapter addresses a number of successful approaches that have recently emerged to answer this question.

**Note:** For the purpose of this discussion, "practical skills" means skills performed by hand (as in separating the white and yolk of an egg) or with human intervention using equipment, tools or technology requiring guidance, force or movement (as in welding a joint). Practical skills primarily require physical dexterity, although an understanding of principles, processes and sequences is also essential, especially for more complex practical skills.

In many learning environments, the word "competency" has replaced the term "practical skill." The terms are not entirely interchangeable as competencies can also include the application of knowledge and theory not associated with practical skills. But in general, the demonstration of a practical skill can also be described as demonstrating competency.

## BASIC CONSIDERATIONS

### The environment of teaching practical skills

Generally both equipment and people are required for the development and assessment of practical skills. The problem is that we often limit our thinking in relation to both of these elements.

First, purpose-built facilities, usually established at enormous expense, have been designed to accommodate the specific requirements of the development, practice and application of practical skills. Multiple sets of equipment or tools required for classroom groupings are expensive to establish and maintain. With the increased use of technology and built-in obsolescence, the shelf life of tools and equipment is reducing and creating enormous pressures on the education budget — a budget that in most places cannot keep up with the expanding demands.

Second, the people within the educational environment have most frequently focused on education and training occurring in institutions with specialist teachers or trainers. This has been particularly so in the development of practical skills. The training of specialist staff remains a focus of teacher training, and industry recruitments into the educational sector have strong affiliations with their particular sector of the industry. As a result the engineering staff haven't ventured into the commercial cookery facilities, for example, and the plumbers certainly have not ventured into the music suites.

The creation of specialist training people and facilities has limited our thinking and practice. We need to look to other models that allow us to move in different directions. By creating new models of practice we grant our learners greater flexibility and increased opportunities while reducing the barriers to their learning.

### Learning practical skills

Teaching practical skills requires using very precise instructions to enable the learner to follow the process and to repeat the skill. Most often this involves using both visual clues and text or audio prompts. It certainly requires special skills in an instructor if there are no visuals. For open and distance learners, the most frequently used method for teaching practical skills is using print-based illustrations of step-by-step procedures. This method still has its shortcomings, of course, and so alternatives are sought.

### Diversity in approaches to learning

A major consideration when teaching practical skills is the diversity in the preferred learning styles of learners. Experiential learners become frustrated sitting through a lengthy explanation of a process; they just want to go and try it out. Theorists need to understand everything in minute detail before they embark on the practical application. Other learners will ask the "what if" questions, and still others will always want to know "why."

Recognising different learning styles is an important factor in assisting learners to develop practical skills. Catering to the different needs is critical for success.

## LEARNING MATERIALS

As mentioned above, print-based materials are a valuable tool in providing instruction for the development of practical skills. Other modes that have more recently overtaken print materials in ODL include video and interactive multimedia on CD-ROM.

### Video

While slides and film have been used in the past, more recently video has been the preferred medium. With portable video cameras being readily available and not

requiring special lighting or huge production facilities, video is a viable option for many educational institutions. As well, the quality of this technology continues to improve, and the emergence of home video editing suites has reduced its cost. Video editing is a relatively simple process and staff with limited experience can produce a short video without difficulty. While it is not broadcast quality (which remains an expensive business), it is good enough to clearly demonstrate the steps and stages for the processes required to perform the practical skill. It is relatively low cost and can be produced fairly quickly and easily.

Video is a successful medium because it links the audio and the visual together to provide a multisensory experience for the learner. The benefits of video are the ability for the learner to play, replay, pause and rewind to specific sections of the tape. Because practice and rehearsal is so important in developing competency, video is particularly well placed.

One of the great dangers in using video is that the instructor may decide to include too much information, which can confuse the learner. Learners of practical skills must receive clear and concise directions. The KISS rule (keep it short and simple) is an important first principle to remember with video. A video programme with a maximum length of 10 minutes with several shorter segments is much more useful from the learner's perspective. In fact, recent research with young adults in trade-based courses suggests that segments of less than three minutes are ideal.

Lecturers often struggle with this concept at first as their role in education has been primarily to extend the knowledge of learners by providing explanations and examples. But the longer explanations are best left for a face-to-face setting and not stored on video. The medium dramatically changes the style of educational delivery.

While videotapes can be purchased readily in 120- or 180-minute lengths, for educational purposes it is a good idea to avoid these. The longer tapes reduce postal costs and logistical issues relating to storage and control, but frustrate learners who are forever searching for the section they require. The use of 10- or 15-minute tapes is proving to be a very learner-friendly approach.

## CD-ROM

CD-ROMs have the capacity to store a very large amount of information in a variety of formats including text, animations, video, audio, and graphics including photographs, diagrams and drawings. Increasingly three-dimensional representation and simulations are a feature of this technology.

The educational design of CDs is an important feature. It can range from a very basic design, much like a book on screen with page-turning functionality, through to a completely interactive experience. The most critical feature is that the product be learner-friendly and not leave the learner feeling insecure or lost.

Clearly, CDs cannot be developed without significant technical skills, and to optimise the learning effectiveness a team approach incorporating a computer programmer, graphic artist, content specialist and instructional designer is the ideal. This raises the issue of cost of development. The most effective option is to buy an already-developed product rather than go into full-scale production. Economies of scale are important.

By using the range of media available, learners can have their learning supported and reinforced in a number of different formats. For example, learners might first view a video, which provides an overview both visually and audibly of the practical skill they are acquiring. The video could be followed by clear digital photographs of the step-by-step procedure with either text prompts or a voice-over to provide additional explanation. An overview of the complete process could occur in an animation, and then the whole process summarised in dot points using text. This multifaceted approach is particularly attractive because it meets the needs of a variety of different learning styles.

The benefits of the CD-ROM format are its capacity to store enormous amounts of information, the range of multimedia that can be incorporated and the cost and ease of replication, distribution and storage. Obviously the technology required to support this approach to teaching practical skills is more advanced and not as readily available as video in most instances.

### *Online*

Online learning is, of course, another creative use of technology in the educational environment. However, this approach needs careful consideration for the teaching and application of practical skills. Extremely good infrastructure is required to enable the use of streaming audio and video, which at present cannot be replicated to the standard established on CD.

Many technical and vocational education and training (TVET) systems are now establishing database-driven clearinghouses to record the availability of learning materials suited to ODL. This enables searches for suitable materials to be conducted more simply. This is particularly important given the proliferation of new materials. Additionally the cost to produce materials is extremely high and it is foolish to undertake such projects if suitable material already exists. While customisation may be required for some particular cultural or technical reason, it is often better to approach the existing developer rather than try to replicate or customise the resource at great expense.

## LEARNING ENVIRONMENTS

In taking a broad look at international developments within ODL, there are a number of trends in learning environments that can be easily adapted to most settings. Consider, for example, self-paced packages for study at home, at work or in community learning environments, as well as the significant move to workplace training. Additionally the emphasis of on-the-job training is on the increase. The focus in all of these approaches is clearly on the learner and his or her learning. It removes the emphasis from the people, facilities and tools, although these are still a major consideration.

The development of learning communities or learning partnerships is another significant move in many parts of the world. Based on the concept of lifelong learning, together with the acknowledgement that everyone is a learner and a teacher, exciting new developments enable learning to occur in many different settings. From this perspective, both the community and the workplace are suitable environments to support the teaching and learning of practical skills.

Another trend has been the establishment of mobile classrooms or workshops which allow the movement of facilities, equipment and specialist staff to different locations, although it is restricted to venues linked by suitable transport infrastructure. It allows

the teaching of practical skills followed by the assessment of these skills at some future date after practice in the intervening weeks or months.

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**Australian mobile classrooms**

Mobile classrooms that service regional and remote communities have been established for a number of Australian institutes. The facilities, often built on the back of a large truck, include all the requirements for skills training along with the infrastructure to support them. For example, they all include a generator for electricity, toilet and washroom facilities and some include staff accommodation. Learners are provided with intensive skill development for a short period of time and then given the opportunity of practising the skills within their communities. While some are assessed then and there, many will be assessed by the instructor during the next visit by the mobile workshop.

An alternative model is the use of shipping containers that are modified and delivered for a longer period of time to different locations and then moved on a rotating basis.

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## Learning centres

The development of learning centres (also known as learning commons or information gardens) are an important development in TVET. A community can benefit by supporting a joint educational facility that supports a range of learning outcomes. This may result in a primary and secondary school, technical institute and university combining resources with a local government body to jointly fund a local facility for extended hours of use. In some examples, local industry also accesses the technological infrastructure on a fee-for-service basis to support their own enterprise or small business. This has been particularly successful in close-knit remote rural communities. A co-ordinator facilitates the learning and the use of the facility and oversees the maintenance and upgrades as necessary.

## Partnerships with industry and community

Increasingly partnerships have become a critical feature of the TVET sector, driven by the reforms within the sector that demand closer ties to ensure graduates are employable at the conclusion of their study and that the training is relevant to the industry sector. As highlighted earlier, the increasing cost associated with capital infrastructure, the short shelf life of software, hardware and technology-driven equipment, the diversity in the range of machinery, the variation in processes in competing industries or enterprises and the escalating cost of establishing and maintaining workshops and laboratories are all factors strengthening the need to find new ways of providing training. These include workplace training, on-job training, work-based learning, work experience and the adoption of technology to support self-paced learning in a range of environments. (See chapter 7 for more details on alternative strategies for educational delivery.)

## ASSESSMENT

It is always important to consider the role of assessment in the learning process. Both formative and summative assessment are critical elements that need careful consideration in the development and design of any learning experience, but never is the design so important as in ODL modes of delivery. In the teaching of practical skills, the assessment must measure the performance of the skill to predetermined standards.

Too often a written assessment is devised to test the learner. Clearly there are some styles of questions that will enable a learner to describe their knowledge and skills in relation to practical skills. Most frequently, however, a learner must demonstrate competence by successfully performing the practical skill. How, then, is this done effectively and efficiently in the ODL environment?

### *Formative assessment*

Formative assessment relates to the practice or rehearsal of the skill. Clearly this requires time for the learner to master more complex skills, especially if a range of performance criteria are a feature of the assessment process. However, many learners are capable of self-assessment during this period if provided with clear guidelines, which limits the role

of assessment and increases the role of mentoring during this phase of development. Assessing competence is, therefore, conducted after a period of rehearsal.

## Summative assessment

The summative assessment relies on the learner's ability to provide evidence of his or her ability to perform the skills. This assessment may have certain performance criteria attributed to it and therefore speed, degree of accuracy, application under certain circumstances or to predetermined tolerances may be a feature. The learner has to demonstrate his or her ability; however there can be a number of people or environments in which this can occur.

## Gathering evidence

Evidence of capacity to perform a practical skill can be gathered in many different ways. Again it is valuable to think beyond the traditional learner-teacher relationship and reflect on using key people and tools associated with the learner. By clearly defining the skill to be performed, learners themselves can give some consideration to how they might provide evidence of their ability.

Sometimes viewing an end product created by learners assesses the demonstration of competency. Without applying the skill it would be impossible for them to complete the task. Alternatively they could record their capability on video by demonstrating the practical skill. This method requires additional human and physical resources and is not always feasible or practical. Other examples use validators to verify that learners in an industry or community setting display the skill. Feedback from an employer, supervisor, customer or peer is a useful measure in gathering evidence.

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**Widespread learning for community health**

The Community Services and Health Program of the Spencer Institute of TAFE, based in regional South Australia with branches in Queensland and Adelaide, has many part-time learners in regional areas, thousands of kilometres away from the lecturer. To support them, the institute has developed excellent print-based materials that are posted to learners' homes. The lecturers provide excellent support by fax, phone and e-mail and have extensive resources that learners may borrow through Learning Resource Centres. These include reference books, videos and audiotapes.

Many of the modules include the development of practical skills. These are usually demonstrated for the learners on videotapes, but to show competence, all learners must arrange to attend a campus of the training provider, which has suitable equipment to enable the assessment to occur.

Where there are a number of practical skills required to complete a module, they will all be assessed at the one time if practicable. For some courses where there is a compulsory face-to-face induction workshop to commence the programme, many practical skills are taught and assessed as a part of this initial activity.

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An alternative to workplace assessment that supports learning at home or in the workplace is the approach that allows the learner to learn in an environment that suits his or her needs and then requires him or her to attend an assessment centre. This may be a local venue, technical institution or other community facility which has a suitably qualified assessor as well as the equipment required to enable the learners to demonstrate their practical skills.

### Workplace trainers and assessors

One approach gaining wide acceptance is the use of workplace trainers and workplace assessors. Many individuals will have both qualifications while others may only concentrate on the assessment role. Workplace trainers and assessors are most often existing employees with higher level skills who oversee the learning of staff in the workplace. They are frequently the supervisors of employees who are developing or upgrading their skills base. Workplace trainers and assessors must complete a training programme to understand the essential elements of learning and assessment. Once qualified, they support learners and the learning process within the workplace.

Workplace trainers and assessors perform their tasks on behalf of the certifying training organisation. Maintenance of standards and quality assurance issues therefore remain the responsibility of the certifying body, which is important to preserve the integrity of the qualifications being issued.

With this model there is a major investment required in human capital, course development and training for the implementation of a model based on workplace training and assessment. However this approach does have many benefits in terms of building a strong training culture within industry and in reducing the replication of expensive public education facilities and infrastructure.

### Recognition of current competence

The recognition of current competence (RCC), otherwise known as the recognition of prior learning (RPL), is a feature around which entire pre-assessment centres are now being established. This approach acknowledges that many learners come to a course of study with existing knowledge or skills. For others, their life or work experiences may have provided them with all the skills required for certification at one or more levels, yet they may have been denied the opportunity for formal study and recognition of their skill base.

RCC is a useful tool to acknowledge the skill base in a community or workplace and establishes the credibility of skilled individuals, who may have formerly been untrained or unqualified, to provide a supervisory or validatory role in the learning experience. It requires the demonstration or evidence of practical skills in some form for assessment purposes.

## CONCLUSION

In considering the role of teaching practical skill development in ODL, there are a number of issues that must be carefully considered. Clearly there is a need for learners to follow instruction, to practise and to demonstrate their competence where the learning of practical skills is involved. This will always require the support of skilled people and

a range of tools or equipment to enable the skill development. However, more and more creative approaches to practical skills development are emerging and most can be adapted to local settings.

The emergence of new models for educational delivery and assessment is increasing the learning opportunities. These more flexible approaches frequently involve joint partnerships with industry or community entities, but the benefits for the learner, the employer and the training provider generally outweigh the complexity of the arrangements.

Considerable thought must go into the adoption of many of these models as the initial set-up requires considerable capital investment. What is not frequently understood is the need for ongoing capital as technology is a consumable because of its built-in obsolescence.

The use of public funds to encourage a training culture within industry and a collaborative approach to the use of industry standard equipment and facilities, which reduces demand for public resources to duplicate workplace environments, are fundamental issues to be addressed when considering limited education budgets. The movement of resources to empower different people and facilities to be accessible for training opportunities is a feature which needs careful consideration by policy-makers.

Without a doubt, the commitment to educational resources, especially educational technology to support ODL, must also be a high priority. The strategic use of these resources is a major consideration and a closer analysis of the particular options is critical. By focusing on the learner and the learning outcomes, educationalists can significantly reduce the barriers and increase the opportunities and flexibility offered to their customers.

# CHAPTER 10

## QUALITY ASSURANCE IN THE DELIVERY OF TVET PROGRAMMES VIA ODL: THE CASE OF A SMALL ISLAND DEVELOPING STATE

*Olabisi Kuboni*

### INTRODUCTION

Small developing countries, with their limited resources and, probably more importantly, their inefficient use of those resources, often find themselves so overwhelmed by the demand to provide services of various kinds that little sustained attention is paid to the quality of what is provided. The sums allocated in successive annual national budgets for the respective service sectors are almost all spent on plant and equipment and staff remuneration. Moreover, to the extent that any thought is given to quality issues, it is almost taken for granted that the standards set by the more industrialised countries will serve as the benchmark for local practice.

The above scenario also represents the situation in the education system in most of these countries, including the technical and vocational education and training (TVET) sector. This chapter focuses on the practice in small developing states where systems for establishing and maintaining quality in the delivery of TVET programmes are either non-existent or in the early stages of development. Trinidad and Tobago is used as the case to address this issue since it has recently set up an agency charged with the responsibility "to develop a system of national training to improve the nation's competitiveness and turn technological and economic change to the country's advantage" (Supersad, 2000). It is against this background that the National Training Agency (NTA) of Trinidad and Tobago was launched in June 1999. (The NTS is discussed in greater detail later in this chapter.)

### TVET IN TRINIDAD AND TOBAGO: AN OVERVIEW

The twin-island state of Trinidad and Tobago is located at the southern end of the Caribbean chain of islands, close to the South American mainland. The southern part of the island of Trinidad is approximately 11 kilometres from Venezuela. Its total land mass is about 5128 square kilometres (1980 square miles). Its population is 1.3 million

with some 68% of that total in the 15- to 64-year age bracket. Unemployment stands at approximately 14% of the labour force. The country's economy is based largely on the production of petroleum and natural gas. Successive governments have attempted to diversify the economy away from a reliance on these two products and have paid special attention to tourism and manufacturing. Nonetheless, the economic resource base remains largely restricted to oil and gas.

While technical/vocational education has existed in the country since the beginning of the 20th century, it was not until the 1950s to 1960s that it became fully established within the formal sector beyond the primary level. This development more or less coincided with the country acquiring independent status. Educational reform was high on the agenda of the government of the day, and this entailed, in part, increased emphasis on technical/vocational studies. This new policy orientation was realised on three fronts.

First, the secondary school curriculum was expanded to include relevant subjects, with government itself introducing a new type of secondary school (the modern secondary) in which the teaching of technical/vocational subjects was emphasised. Later, the introduction of the junior secondary/senior comprehensive sector expanded this aspect of the secondary school curriculum even further.

Second, tertiary-level institutions catering exclusively to this area of study were established. And third, the government also introduced youth camps, which targeted school dropouts and unemployed youth, providing them with the opportunity to acquire employable skills.

For the last four decades, therefore, TVET has been a core component of the curriculum of the education system of Trinidad and Tobago. More recently, however, perspectives about the role and function of this area of learning in the national economy have evolved, giving rise to demands for a new outlook on the type of training provided and on the modalities used for such educational provision. The following sequence of factors are considered critical in influencing these demands:

- Notwithstanding the advantages of being a producer of oil and gas, output is small and there continue to be concerns about the country's capacity to sustain itself with this limited natural resource base.
- While, in the prevailing globalised environment, foreign direct investment (FDI) is widely seen as a feature of economic development in all countries, the rationale for its inclusion in less-developed countries underscores the continued weakness of these economies. This view is shared by Kamara (1998), who citing a 1996 circular of the Trinidad and Tobago Ministry of Finance, summarises the reasons for the promotion of FDI in Trinidad and Tobago this way:
    - The need for structural adjustment occasioned by the economic slippages of the 1980s
    - The need for the reorganisation of the public enterprise sector which had been a drain on the treasury
    - The problem of the high external debt
    - The need to raise production and increase employment
- It is widely held that FDI has given rise to increased employment opportunities but that these are not being taken up given the low levels of relevant skills in the national population.

- This demand for a significant increase in the skilled workforce has spawned the proliferation of a new set of educational providers in the TVET field. In addition to the conventional institutions at the secondary and tertiary levels mentioned above, other providers have emerged. These range from specially established government and quasi-government agencies catering to non-institutionalised youth, industrial organisations, community-based organisations, non-governmental organisations (NGOs), and even individuals.

- Diversity in the clientele seeking access to the training is more pronounced now than previously. Most notably is the perception that, proportionately, there has been an increase in the category referred to above as school dropouts and unemployed youth. There is also the perception that many in this group are demotivated. Another category gaining prominence are the mid-career adults seeking to enhance their job skills or to acquire new ones. Those who fall within the category of recent secondary school graduates may be further subdivided into graduates with full qualification at the general education level, those with partial qualification at the same level, and those with higher-level qualification.

- Providing opportunity for skills training is increasingly being seen as an important route for addressing issues of poverty alleviation and relief from social deprivation.

- The extent of the demand both in terms of the size and range of the potential student cohort, as well as in terms of the range of training programmes required, has given cause for concern about the adequacy of current delivery arrangements whether recently introduced, or existing for a long period of time.

## QUALITY, QUALITY ASSURANCE AND QUALITY CONTROL

While the notion of quality in education is not new, its rise to prominence recently is due in no small measure to the increased scrutiny being made of the output of educational institutions with a view to assessing its relevance and appropriateness to societal needs. Society is now demanding that graduates of the formal education sector be equipped to function in a more complex and dynamic work environment. Consequently, whatever may have been the connotation of this concept earlier, educational quality in today's world is a measure of the fit between educational output and the requirements of the world of work.

Alongside this perspective, there is also the view that quality does not exist in isolation of its context of use. While this may appear to be a non-contentious statement on the surface, problems can arise if one seeks to determine what the context is. Such an undertaking may require some attempt at resolving conflicting perspectives. What, therefore, are the appropriate criteria for determining an appropriate context for skills training? There are three worth considering.

First, the idea of TVET being industry-driven has been taking centre stage recently, no doubt heightened by the close working association between the NTA (the new training agency established by government) and the industrial sector. Inherent in that outlook is the focus on a competency-based approach to learning, identifying clearly defined areas of learning and setting clear criteria to be attained in order to demonstrate competence in specific job-related skills. Such an approach, advocates contend, can be expected, over time, to produce workers who are multiskilled and who are equipped to deal with the challenges of an economic environment in which job-for-life expectations are a thing of the past.

A second criterion is the notion of lifelong learning with its emphasis on building skills in learning-to-learn, regardless of the area of education and training involved. The third criterion highlights experience as playing a significant role in learning and gives high priority to conceptions that regard learning as the construction of knowledge.

There are important differences in the notion of quality inherent in the three ways of defining context suggested here. Moreover, these differences have the potential to create tension in the event that there is inconsistency between the context in which educational practice is actually taking place and the notions about what that context ought to be.

While the two terms "quality assurance" and "quality control" are frequently used interchangeably at the level of practice, the distinction that the literature makes between them is an important one that cannot be ignored.

Quality assurance is defined as the set of activities that an organisation undertakes to ensure that standards are specified and reached consistently for a product or service. Consequently, it entails taking proactive measures to avoid errors. Quality control, on the other hand, involves reactive measures to correct faulty products and services or, alternatively, to discard them.

Where TVET in Trinidad and Tobago is concerned, the position that underpins the establishment of the NTA is one that emphasises the need to develop systems for the implementation of quality assurance measures.

## THE CASE OF THE NTA OF TRINIDAD AND TOBAGO

Given the proliferation in the number and type of training providers, the Government of Trinidad and Tobago set up the National Training Agency (NTA) as an umbrella agency to provide guidance and cohesion for the continuing development of TVET, thus avoiding the inevitable inefficiency that goes with piecemeal approaches to change.

The NTA evolved out of the National Training Board (NTB), which was primarily concerned with identifying areas for training and ensuring that the relevant training was provided (in some instances doing it itself). The NTA for its part has stated categorically that it does not provide training. Rather it sees itself as facilitating and co-ordinating the efforts of training providers to meet the needs of trainees, employers and the economy as a whole. To this end it has set itself six strategic aims, namely:

1. To develop the rationale for a national training plan based on an analysis of which sectors of the economy offer the best opportunity for sustained social and economic growth and development

2. To develop the occupational standards which are required for each of these key sectors and a coherent national framework for vocational qualifications based on these standards

3. To build a rigorous system of assessment based on the competence-based approach to technical and vocational training

4. To provide high-quality guidance and support to trainers and instructors, training providers and awarding bodies.

5. To enhance participation in lifelong learning and opportunities for all using a variety of modes of delivery (including distance learning)

6. To work efficiently, effectively and in partnership with others

Overall, the NTA set itself the task of addressing two separate yet inter-related goals. First, it would seek to bridge the skills gap between unskilled, unemployed members of the society, particularly the youth, and the demand of industry for a skilled workforce. Second, working in collaboration with other NTAs of the Caribbean region, it would seek to establish occupational standards to facilitate the free movement of skills among member countries of the regional trading grouping, the Caribbean Community (CARICOM). (This second goal emerged as a result of the decision by CARICOM to transform itself into a single market and economy (SME), and in that context to remove barriers to the movement of skilled labour within the Community. At the time of writing, this decision was still to be implemented.)

It should be noted that this trend towards greater "portability" of qualifications is not unique to CARICOM. Rather it has its genesis in the wider phenomenon of globalisation and trade liberalisation. Thus, by setting up NTAs to facilitate the attainment of this goal, member states of CARICOM were essentially falling in line with a trend that was already established at the global level.

Quality assurance, as conceptualised and implemented by the NTA is, therefore, intended to provide the framework for attaining these two broad objectives.

## *Quality assurance, standards, NVQs*

In the field of TVET, the terms "quality assurance" and "national vocational qualifications" (NVQs) are almost inseparable, with the latter being widely regarded as the concrete representation of the principles embodied in the former. The entire system of NVQs as practised in Trinidad and Tobago and other Commonwealth countries was adopted from the United Kingdom, which from the mid-1980s had begun to take steps to standardise its own technical/vocational qualifications. Indeed, some of the factors that influenced the decision to set up the Trinidad and Tobago NTA bear a close resemblance to those previously highlighted in the UK context. For example, Grant (2000) talks about the need for an appropriately skilled workforce in a rapidly developing global economy. He also talks about the mismatch between industry needs and the human resource output of education and training institutions.

In Trinidad and Tobago, the route towards the formulation of NVQs begins with the establishment of occupational standards for respective sectors of industry. To facilitate this process, the NTA was instrumental in setting up industry training organisations (ITOs) to work in collaboration with the agency itself to develop standards for the various areas of work in the respective industries. At the time of writing there are ITOs in six sectors: energy, tourism and hospitality, food and beverage manufacturing, air conditioning and refrigeration, information technology, and construction. Collectively, these six ITOs have drawn up 22 draft standards to date. They include standards for welding/fabricating/fitting (Level 1), emergency medical technicians (Level 2), food and beverage service (Levels 1,2,3), masonry (Levels 1,2,3), and information technology (Level 2) (See *www.ntatt.org* for further details.)

The NTA then converts these standards into qualifications — the Trinidad and Tobago National Vocational Qualifications (TTNVQ) — and uses a standard format for presenting them. For example, the TTNVQ for information technology (Level 2) is subdivided into 10 units, with each unit developed around a minimum of one and a maximum of three objectives. Each objective provides the basis for the creation of an element. Thus one unit may consist of a maximum of three elements. Each element provides an outline of:

- *The performance criteria:* a list of activities that must be performed as evidence that the objective was achieved. These are the outcomes to be attained, or stated otherwise, standards that must be met.

- *The range statement:* a list of the specific tasks or activity sub-units that must be carried out and in which the trainee must demonstrate competence.

- *Knowledge and understanding:* an outline of the essential content; that is the content that the trainee must acquire to support performance of the new skill.

- *Assessment of performance:* the data to be collected as evidence that the objective has been attained, as well as the means for collecting these data.

TTNVQs can be developed for five levels of competencies, namely Level 1 (semi-skilled), Level 2 (skilled), Level 3 (technician), Level 4 (professional) and Level 5 (advanced professional). Each qualification represents a competency that must be acquired, hence the term competency-based training, to refer to this approach to training. The NTA adds further that while its current focus is on TVET, the use of this competency-based system is not restricted to technical/vocational studies.

There are two other points to note about the NVQs. First, it is a self-driven, self-regulatory system and, as explained earlier, is generated from within the context that it is to be used. As also noted earlier, the NVQ is developed based on standards established by the appropriate ITO. In this regard, the NTA advises that this practice represents an important point of departure from the dominant mode of assessment that currently exists in the Caribbean region. Specifically, the agency draws attention to the Caribbean Examinations Council (CXC), which develops syllabi and administers examinations at the secondary level, and to some extent at the primary level of the regional educational system. The examination system that CXC administers is a centralisd one, whereas the system for developing and awarding NVQs is implemented at the local level.

Second, NVQs are designed to support assessment rather than teaching. Thus, in particular in an industrial setting, the individual with whom the trainee interacts periodically in the workplace is the assessor who carries out the function mainly by observing the candidate's performance on the job. In emphasising the perceived value of this shift from teaching to assessing, the NTA notes that it is the candidate who signals his or her readiness to be assessed. Moreover, given a focus on competence, there are only two possible outcomes to the assessment exercise: the candidate is assessed as either being competent in the skill, or not competent.

TTNVQ procedures are administered by three sets of personnel. The first, the assessor, is competent in the area being tested and has received training in the techniques and strategies of assessing. As indicated above, assessment is normally done through observation. An internal verifier is responsible for ensuring consistency among all assessors in a single training organisation. Finally, the external verifier functions at the industry level and periodically evaluates the organisation to ensure that it maintains the required standards for assessing trainees. Ultimately, the NTA, acting as an accrediting agency, conducts an audit of the training organisation, paying special attention to areas such as the curriculum, physical facilities, staff qualifications and teaching methods as they pertain to the programme for which accreditation is being sought.

Recently two providers were accredited to deliver one programme each. The Youth Training and Employment Partnership Programme (YTEPP) received approval for the Level 1 programme in welding, fabrication and pipefitting, while the South West

Regional Health Authority (SWRHA) was accredited to provide training for the emergency medical technician (EMT) basic training programme.

Developments of the type are not unique to Trinidad and Tobago. As indicated earlier, the implementation of NVQs in Commonwealth countries came about as a result of the UK initiative to introduce its system to other member countries. Thus, Gnanam's (2000) description of the establishment of the National Qualifications Framework (NQF) of India reflects some core similarities with the Trinidad and Tobago system. However, in spite of these similarities, the two systems differ in two important respects.

First, the system that is just getting off the ground in Trinidad and Tobago is industry-driven, as evidenced by the establishment of ITOs to formulate the occupational standards referred to earlier. Hence, while industrial organisations represent only one type of training provider, there is no doubt that they wield considerable influence in determining the nature of TVET and they are setting the pace for other providers, including the long-established institutions in the formal education sector.

On the other hand, Gnanam describes a situation in India in which universities still hold the dominant position over newer non-traditional providers. Thus he notes, "Presently there is no system to recognise [the] important qualifications that provide career orientation to … graduates with appropriate emphasis on the job-related skills and competencies" (Gnanam, 2000).

A second difference lies in what Gnanam describes as the "unit of accreditation." He explains that different accrediting agencies use different units, and he lists these units as the institution, the programme, discipline-based departments of studies and faculty. As noted above, the accrediting agency in Trinidad and Tobago, the NTA, uses the programme as the unit to be accredited. Gnanam points to difficulties in using the programme as the unit in India given "the large network of institutions offering thousands of qualifications at each level." At the same time, he is very conscious of the problems that may occur when the whole institution is taken as the unit since "it may be considered as too large a unit to be the base for quality assurance particularly for purposes of mutual recognition."

No doubt there are pros and cons whatever unit is selected, and countries need to consider their own circumstances when making this decision.

## ISO 9000

Even as countries are using the UK model of quality assurance in TVET, many, including Trinidad and Tobago, are giving consideration to the ISO 9000. The International Organization for Standardization (ISO) was formed on February 23, 1947 to create international industrial standards. Some 55 years later the ISO has evolved into a non-governmental worldwide federation representing national standards bodies of more than 100 countries. The federation, which now has its central Secretariat in Geneva, comprises some 2700 technical committees, subcommittees and working groups, which perform the task of setting standards for a range of products and services.

The ISO 9000 is a series of quality management and quality assurance standards for industry. The series comprises three main types of quality standards, the most all-encompassing being the ISO 9001 which applies if a company is involved in design, development, production, installation and servicing (Harding and Tesolowski, 2000).

While the ISO 9000 was essentially developed for industry, it is increasingly being regarded as a generic tool applicable to all types of organisations, including educational and research organisations. Karapetrovic, Rajamani et al. (1998) identify several ways in which higher education can benefit from applying ISO 9000 standards to its operations. These include:

- Clearer articulation of the rights and responsibilities of students and staff bodies
- Formalisation of objectives in an explicit form
- Usefulness of the quality system in accreditation by government bodies

The possible implications of quality assurance agencies working in the area of TVET are addressed later in this chapter.

## COMPETENCY-BASED TRAINING AND OPEN LEARNING

It can be argued that a competency-based approach to TVET incorporates features that are consistent with some of the key principles that underpin open learning. Hodgson (1993) notes that the key feature of open learning is that it seeks to remove all barriers to learning, most notably barriers of time and place of study. She explains further that it seeks to give learners optimum control over their own learning. Of special importance in her description of the concept is the emphasis placed on the needs of the learners rather than on the requirements of institutional structures.

Rowntree (1991) goes even further in specifying the barriers that open learning seeks to eliminate. He lists 10 common barriers as lack of information, unsuitable content, unsuitable methods, the qualifications gap, timing, place, costs, anxiety, domestic pressures and physical disabilities. He then identifies what he perceives as the key characteristics of open learning. These include the ability of learners to take courses to suit their own purpose, to choose content, thus focusing on what they require and ignoring what they do not need, and to choose when and how they will be assessed. Learners are also able to decide on the route of study and to have access to a variety of teaching methods.

There is no doubt that the training approaches discussed above contain some of the features of open learning. There are no entry-level qualifications specified; indeed given the multi-level structure of the NVQs, starting from semi-skilled, very few persons if any would be debarred from attempting to obtain an NVQ. With providers ranging from community-based organisations to formal educational institutions, all persons who so desire should be able to find a provider suited to their particular needs and circumstances. Factors such as age, gender and socio-economic background become less of a barrier in light of the official recognition given to a wider range of providers under the system implemented by agencies such as the NTA of Trinidad and Tobago.

One provider in Trinidad and Tobago whose operations are geared to minimise exclusion and foster greater inclusion is the Youth Training and Employment Partnership Programme (YTEPP). This quasi-governmental organisation offers both community-based and centre-based programmes. The former type is targeted to youths 15 to 30 years of age, especially those in rural and remote areas. Communities are encouraged to decide on the projects to be conducted, and classes are held wherever space can be provided.

Even the more structured centre-based programmes allow for a fair amount of flexibility. For example, the Welders and Fabricators Programme includes a mix of teaching/learning methods, including actual project work in which the trainees are given the opportunity to fabricate storage tanks and steel pipes for oil refineries and petrochemical plants.

Another important open learning feature of the competency-based approach, which is probably only practised in the work environment, is the opportunity given to trainees to decide when they are ready to be assessed.

## Which is more important: the learner or the task?

In light of all of the above, can one really equate this approach with open learning? A positive response to such a question may not be completely appropriate. Even though it may appear that the learner is the focus of attention, closer examination suggests that it is the requirements of the task rather than the needs of the learner that is driving the process. It can be argued that the real rationale for breaking down the task into its component parts is to ensure accuracy and efficiency in the performance of the task rather than to facilitate meaningful learning on the part of the trainee/learner. This interpretation of the practice is reinforced by the fact that only two possible outcomes are entertained: the trainee can either perform the skill or not.

Indeed, competency-based learning is firmly rooted in the traditions of behaviourism, which deals only with the way the external environment is organised to facilitate the attainment of an observable outcome. No attempt is made to deal with the learning process that the individual brings to the task. This remains firmly locked away inside the "black box."

## Assessing, teaching, learning

While acknowledging that a lot of learning can take place without teaching, the apparently low profile given to teaching in the development and implementation of NVQs may not be totally consistent with the ideals of open learning. As noted above, assessing is the main function of the person with whom the trainee interacts when training takes place on the job. Any other tasks that he or she undertakes are subsidiary to that of assessor. It is likely, though, that in the case of the other types of providers, greater emphasis may be placed on building a curriculum to support teaching and learning. However, because the NVQ is structured to give prominence to the testing function, it is very likely that testing strategies may dominate even outside of the period set aside for assessment. There is reason to have strong reservations about an educational experience that minimises the role of teaching in the learning process or, stated otherwise, that seeks to test without teaching.

Open learning, while not insisting on the presence of a human teacher at all times, recognises the importance of including the teaching function in the learning experience. That teaching function may be embedded in self-study materials, which may be used in conjunction with teaching-learning experiences that require interpersonal interaction. Such interaction may take place in a face-to-face setting or through telecommunications technologies. In open learning there is a clear role for testing, but testing cannot be seen as a substitute for teaching.

## What about the curriculum?

Those favouring the current approach may counter the perspective expressed above with the argument that the route from the articulation of occupational standards to the generation of NVQs is underpinned by principles consistent with the practice of curriculum design and development. These principles are probably only minimally applied and the intention is not so much to create a curriculum document but to identify and sequence tasks related to the skill to be acquired in a manner that facilitates ease of perusal by both trainee and assessor. A curriculum document would place the new area of learning within its broader context, would provide a rationale for the new learning and would attempt to analyse the target learners and articulate entry-level knowledge. It would seek to identify overall module goals out of which would come target objectives. It would provide a clear course description and give clear guidelines about how learners are to be evaluated, ensuring that evaluation strategies are suited to the type of learning that students are engaging in. In addition, it would seek to ensure that the strategies used could be expected to yield outcomes that are capable of demonstrating that objectives have been achieved.

## Lifelong learning

One of the strategic aims of the NTA is to enhance participation in lifelong learning. Advocates of open learning also subscribe to this notion. One wonders, though, whether the competency-based approach is capable of setting learners on the path of lifelong learning. In the wider literature of learning, theorists and practitioners alike have been exploring the ideas associated with constructivism in an attempt to identify teaching strategies that can enhance learner capability to build knowledge. They argue that it is only when learners are viewed as active participants in the knowledge-building process that the issue of lifelong learning can be considered. There are those who would contend that the behaviourist approach to learning adopted by organisations like the NTA is inconsistent with a commitment to lifelong learning.

## International standards and open learning

Whether the benchmark used is the NVQ model of the United Kingdom or the ISO 9000, it is evident that, based on prevailing conceptions, TVET must conform to worldwide standards. In this era of globalisation, and given the dominant position which industry holds in that process through the multinational corporations, it is clear that the "portability" of qualifications would not simply be treated as a valuable option, but as a necessity.

At the same time though, one cannot deny that an adherence to a benchmark that is set at a global level may undermine the essential flexibility that is a hallmark of open learning teaching/learning strategies.

## A return to the issue of quality

What then of the issue of quality in the competency-based approach to TVET? As stated earlier, quality does not exist in isolation from its context of use. Further, it was suggested that three possible contexts may be the industry-driven model of TVET that currently prevails, the ideal of lifelong learning and notions of learning that emphasise the role of experiential knowledge and learning as the construction of knowledge. It

would seem that difficulties may arise if policy-makers and those in key decision-making positions make greater claims for the current approach to TVET than it is capable of producing. A clear perspective becomes even more necessary, since TVET is often projected in terms of its contribution to human development.

## QUALITY ASSURANCE AND THE MONITORING AGENCY

While acknowledging that the core function of the Trinidad and Tobago NTA is to ensure quality in the implementation of TVET programmes, one may wonder what quality-assurance mechanisms exist to govern the umbrella body itself. Or, to put the inquiry in the words of a popular Trinidad and Tobago calypso, who (or what) will guard the guards? What structural arrangements must an organisation like the NTA put in place to allow it to carry out its mandate efficiently?

The following are proposed requisite components of such a body. (These are intended for a wider audience since some of the components are already a feature in the NTA.)

- *Curriculum development:* to support the work of providers in designing new curriculum and making changes to existing ones
- *Instructional design:* to assist providers in articulating learner needs and designing systems to support varying categories of learners
- *Systems analysis:* to engage all stakeholders in a review and evaluation of current organisational structures with a view to effecting changes as required by changing educational goals
- *Technology support services:* to facilitate access to a well-integrated technological infrastructure to support a range of functions including teaching and learning, administration, student support services and publicity
- *Quality assurance and accreditation:* to set standards to govern the operations of all aspects of the TVET programme
- *Training:* to provide ongoing professional development activities for various categories of personnel
- *Project management:* to ensure the efficient co-ordination of the various elements of the work of the organisation
- *Research and evaluation:* to carry out continual analysis and evaluation of the operations to determine areas of strength and/or weakness in the system and as a forerunner to making recommendations for improvement

## ACKNOWLEDGEMENTS

# REFERENCES

Gnanam, A. "Qualifications in an Era of Globalization."  Paper presented at parallel symposium of the 14th Conference of Commonwealth Ministers of Education, Halifax,  Canada, November, 2000.

Grant, Maida. "Standardising Techvoc Qualifications — the UK Experience." In *Skills 2000 and Beyond: Towards a Caribbean Technical/Vocational Education and Training System — Forming Regional Linkages*. Chaguanas, Trinidad and Tobago: National Training Agency, 2000.

Harding, K.A. and D.B. Tesolowski. "Enhancing Technology Education Students' Understanding of ISO 9000." *Tech Directions*, 59, no. 9 (2000), 32-35.

Hodgson, B. *Key Terms and Issues in Open and Distance Learning*. London: Kogan Page, 1993.

Kamara, K. *Foreign Direct Investment in Trinidad and Tobago During the Period of the 1990s: Trends, Benefits, Costs and Prospects*. San Fernando, Trinidad and Tobago: Kasala Kamara, 1998.

Karapetrovic, S.D. Rajamani, et al. "Quality Assurance in Engineering Education: Comparison of Accreditation Schemes and ISO 9000." *European Journal of Engineering and Education*, 23, no. 2 (1998), 199-212.

Rowntree, D. *Teach Yourself with Open Learning*. London: Sphere Books Ltd., 1991.

Supersad, C.G. "The Genesis and Evolution of Technical and Vocational Education and Training in Trinidad and Tobago." In *Skills 2000 and Beyond: Towards a Caribbean Technical/Vocational Education and Training System — Forming Regional Linkages.* Chaguanas, Trinidad and Tobago: National Training Agency, 2000.

# CHAPTER 11

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# MOBILITY AND ARTICULATION

*Adrian R. Haas*

## WHAT IS ARTICULATION?

Articulation, in an educational sense, is the creation of pathways or linkages to facilitate the movement of students between programmes and institutions. The notion of a vocational education pathway implies passage through a series of educational experiences or employment-related competency formation, which aim to progress through to an occupational destination. Further pathways may then lead a way to another occupation.

Educational articulation comes in different forms. For example, "vertical" articulation could be the advancement of students from general education to technical and vocational education and training (TVET) programmes at polytechnics, technical institutes, community colleges, industry training centres, etc. Another important form of articulation is the traffic of TVET graduates to programmes at universities or comparable institutions. Articulation can also exist within TVET systems or institutions. For example, students who successfully complete a skilled worker training programme might progress to a technician-level programme.

Consider also the concept of "reverse" articulation, which might take place when an individual who has partly or fully completed a university programme, or some other form of advanced studies, subsequently undertakes part or all of a TVET programme at a polytechnic or technical college. Reverse articulation may be the outcome of a university graduate deciding that he or she lacks practical knowledge or specific skills which are required for employment purposes, and which are conveniently available through a TVET institution. Such traffic is more likely when the status of TVET institutions as providers of relevant programmes in a community is high.

Successful articulation arrangements are often reflected in effective credit transfer practices. Credit transfer occurs when institutions agree to recognise the previous formal studies undertaken by a student and to grant to that student an agreed level of course credit for the new programme being enrolled in. Therefore, the receiving institution recognises that the student has previously achieved comparable knowledge and competencies to justify being given an exemption.

Intertwined with the concept of articulation is "recognition of the prior learning" (RPL) achieved by an individual. Such recognition is the sum of formal studies and other knowledge and competencies gained informally, perhaps as a result of skills acquired

during employment. Well-structured systems of education will provide for acceptance of candidates for further study, who rely to some extent on RPL for entry to formal programmes of study, with or without some degree of advanced standing.

Not all forms of articulation will result in credit transfer or RPL. There will be many instances where articulation simply results in the ability of a student to transfer from one programme to another without any credit being granted. Additionally, where a student does not satisfy entry requirements, some bridging studies may be necessary to redress any deficiencies.

## THE IMPORTANCE OF ARTICULATION AND ITS IMPACT ON MOBILITY

The development of education for the world of work in industrial societies during the 20th century has reflected to some extent Taylor's and Ford's notions of labour management and production methods based on rigid organisational control, with work being broken down into increasingly simplified tasks the further down the hierarchy an employee is located. Such notions have been compatible with the development and delivery of terminal courses of study in vocational education, on the basis that a person need only be trained to undertake a circumscribed range of tasks, with professionals and managerial staff directing and supervising work.

Of course, Taylor's model of corporate organisation is still employed to some extent, particularly when production has been relocated to developing countries to take advantage of low wage costs. However, during recent decades, in the face of globalisation and the accompanying knowledge revolution, work has increasingly been re-engineered. Organisations tend to require adaptable and knowledgeable workers able to cope with change. Staff need to be capable of working in teams and dealing with tasks and duties that overlap. Employers are seeking those who have a background that predisposes "trainability" among their qualities (Dougherty, 1990).

Therefore, the previously widely held notion that after an initial cycle of general education, followed by specialist studies or training for skilled work or a profession, the individual need not be overly concerned with further education or training, has proved to be incompatible with reality. Rapid and continuing change is now the norm in almost all fields of human endeavour. Jobs which have existed for long periods of time can simply disappear overnight.

Changing occupational needs increasingly demand ongoing provision of lifelong learning, which may be a combination of formal courses, training or perhaps some form of on-the-job learning. The whole notion of lifelong learning encourages well-structured articulation arrangements and undermines the *raison d'être* for terminal courses of vocational education.

Effective articulation arrangements are a highly desirable feature of national educational offerings. Pathways created can directly influence the attractiveness of educational programmes and have considerable impact on participation rates and overall standings. In any case, an educational programme which is terminal in nature will be less attractive to potential students and their parents and be perceived as having a lower status than one which offers the possibility of realistic follow-on studies, either immediately or at a later time.

Programmes which provide effective articulation arrangements will advance the educational and, subsequently, the occupational mobility of an individual. Relevant

opportunities for articulation provide encouragement for the individual to capitalise on personal ability and enhance any possibility to conveniently move between occupations.

These notions are not new. In 1964, the joint UNESCO/International Labour Organization *Statement on Technical and Vocational Education and Training* contended that TVET should be organised so that "every person can continue his education until all his potentialities have been developed" (UNESCO/ILO, 1964). More recently the 1999 UNESCO TVE Congress held in South Korea considered the question of articulation in the context of improving systems of lifelong learning. The Congress recommended that

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**Australia: vocational education in upper secondary school and articulation**

Until the mid-1980s, some Australian states had provided secondary technical education which operated in parallel to the academic streams of high schools in separate technical schools. Although such programmes had been in operation in some states since about 1905, they were gradually discontinued in favour of providing general secondary education, which was directed at university entry.

Since the mid-1990s, there has been a reintroduction of TVET in upper secondary schools in quite a different way. In the new format, vocational studies have been integrated into the secondary curriculum, with the advantage that students can take such studies as part of the general secondary curriculum or treat the experience as pre-vocational studies which might progress to a career.

The decision to implement such programmes emerged from concerns that some broadening of the upper secondary curriculum was necessary to cater to young people who didn't wish to enter university. It received strong support from government, employers and unions, as well as from industry and commerce, where programmes require paid work experience. Students completing a senior secondary certificate and a technical and vocational qualification are awarded dual testamurs.

Central to the success of vocational studies in secondary schools in Australia has been the development of sound articulation arrangements between secondary schools and universities/post-secondary vocational education providers. All these providers operate under the Australian Qualifications Framework, which was introduced in 1995 to provide a single nationwide system which applies to secondary schools, TVET providers and universities.

Because vocational studies undertaken in secondary school were drawn from the national vocational programmes also used by TAFE colleges and other providers, such as private vocational colleges and industry training centres, articulation has been a matter of course (Keating, 1998). These arrangements have also been accepted by the Australian universities (National Working Party, 2000).

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national TVE systems develop "close interfaces with all other education sectors, particularly schools and universities, to facilitate seamless pathways for learners. The emphasis must be on articulation, accreditation and recognition of prior learning to enhance opportunities" (UNESCO,1999).

## NATIONAL PRIORITIES

National systems of education and training that offer effective articulation opportunities are in a better position to address issues of lifelong learning as the nature of work changes, rather than try to manage redundancy or unemployment. National policy-makers can play an important role by trying to ensure that, as much as possible, realistic educational pathways are embedded in overall systems of education and training at the planning stage, even if economic constraints or other strategic considerations limit full implementation until a later time.

Many developing countries have ambitious objectives to establish new industries and service-oriented activities as quickly as possible. As a first step, low-cost, low-skill labour-intensive industries are frequently attractive. To move ahead to more rewarding economic outcomes, it is necessary for a country to increase the numbers of highly skilled personnel to support higher value-added industries. Such objectives are considerably more difficult to attain if the educational system does not have the capacity to upgrade its existing workforce to cope with new forms of work.

Such is the nature of technological change: it is increasingly difficult to make long-term predictions on how to structure initial and recurrent forms of vocational education and training. On one hand, industry often signals that individuals should be trained to undertake quite specific duties, and is frequently justifiably critical of the inability of TVET institutions or systems to translate industrial need into the competencies of programme graduates. Ideally, such objectives need to be harmonised with the needs of industry or commerce, but it is often difficult for educational authorities to predict labour market demands.

Such criticism of TVET by industry and other stakeholders may be, in part, a reflection of defective linkages. Nevertheless, the dilemma for the TVET authorities is deciding how much they should structure educational programmes to address the perceived immediate needs of industry and commerce.

The main focus of TVET, regardless of whether it is provided through an upper secondary-level programme, technical college, community college, polytechnic or industry training centre, should be to assist an individual to gain occupational competencies in a specific field, with the aim of gaining employment as a skilled worker or technician/paraprofessional. This objective should not be at the expense of general education (except in the case of short-term training arrangements), because it is important that an individual has exposure to broader aspects of education. An objective should be to permit graduates of any programme to advance to further studies if they have the inclination and demonstrated ability to cope. On the other hand, if a programme of study is overly specialised, particularly if it is more or less focused on specific skills training, it is less likely to provide the sort of preparation that would assist in providing an individual with future options.

Many countries have found that there is a significant mismatch between the output of TVET and higher education providers, and the needs of the labour market. This can result in severe unemployment or under-employment for programme graduates. It is

important that seeking to provide articulated pathways to further study for TVET graduates is not done by expanding unemployment.

In many countries there is something of a fixation for the attainment of a university degree, with any other outcome being seen as a failure by both students and their parents. The provision of articulation pathway should not be seen as having as its main objective providing students with a mechanism to attain a degree, regardless of ability. Such an outcome should be one of a range of options available to students.

It is not uncommon for students to enter a TVET programme after have been refused entry to a university. Such an outcome can trigger a feeling of failure in the individual. TVET programmes should be able to offer attractive pathways that can redress this situation and create an environment where the considerable expense incurred to that point, in both human and financial terms, can be redirected to the benefit of both the individual and the broader community.

Developing nations, particularly those that are still largely agrarian, frequently find that the modern sector is incapable of absorbing the output of TVET or higher education institutions and providing wage-paying employment. When considering articulated pathway solutions in response to perceived need, preparation for other forms of work such as self-employment also need to be a high priority.

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**Jamaican initiatives**

The University of Technology (UTech), Jamaica accepts graduates from upper secondary school with a minimum of five Caribbean Examination Council subject credits (a general secondary education certificate). These credits may include technical subjects, but must also include mathematics and English language.

The university has franchise arrangements with a number of community colleges in Jamaica, whereby successful community college students can articulate to guaranteed places in UTech courses. Similar arrangements are currently being explored with community colleges elsewhere in the Caribbean. Graduates from non-franchise Jamaican colleges are also able to apply for entry to UTech, and the university will evaluate the courses they have taken in their associate degrees or certificates.

Jamaica's Human Employment and Resource Training Trust (HEART) and the National Training Agency (NTA), as well as UTech have worked together to create an Engineering Technician's Certificate, which not only leads to employment in the workforce, but also has the option to articulate into a UTech engineering diploma or even the Bachelor of Engineering programme (George, 2001).

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## BARRIERS TO ARTICULATION

Countries that are at earlier stages of development may not perceive making effective articulation arrangements as an important objective. Indeed, in such instances the very opposite may be the case where demand for education at all levels is high and where

places in all forms of post-secondary education are limited and subject to stringent competitive entry requirements.

In many developing countries, it is quite common for the available funds supporting education to be prioritised towards delivery of primary and secondary education, with limited provision for funding TVET and university-level education. But it is common in many developing countries for primary-level education to fall short of universal provision, and secondary-level education to be available only to limited numbers of students. Nevertheless, most countries aspire towards universal provision of primary and secondary education, and reasonably open access to TVET and higher education, because they realise the importance of working towards an effective system of education in the long term so they might fully participate in the global economy and lift overall national standards of living in a sustainable manner.

Where barriers to articulation exist, they often appear at the interface between upper secondary vocational and university-level education. This situation arises, in part, because the secondary vocational education may not have sufficient academic content, and consequently it is frequently not possible for graduates to proceed to regular university studies. Sometimes such difficulties may be mitigated by indirect pathways being made available, whereby the students may undertake a post-secondary technical education programme which ultimately offers some prospect of further studies.

The same type of barrier frequently frustrates articulation arrangements between post-secondary TVET programmes and higher-level studies. Even though a graduate of a polytechnic or community college may have done well, the possibility of articulation to a related undergraduate degree may be very low or non-existent. This occurs because quota systems effectively preclude TVET graduates from transferring, with or without any courses credits, because available places are taken by students from the secondary academic or general stream.

## PLANNING FOR EFFECTIVE ARTICULATION ARRANGEMENTS

There are a number of steps that can be taken by policy-makers and other stakeholders to encourage improved TVET articulation arrangements:

- Educational programmes should be designed to have clear entry and exit pathways. Pathways might provide for a range of outcomes, depending on the type of course and the capacity and inclination of the individual. A technical college, polytechnic or community college graduate might advance to further studies within a TVET institution, transfer to a university or similar institution or undertake further training on the job. All learners should have the option of going further, commensurate with their abilities and the demands of the job market.

- A national qualifications framework which spans TVET and university-level qualifications should be established. Such a framework will enhance the status of TVET because it will act to clarify the standing of programmes and foster recognition and transferability.

- If institutional bottlenecks occur which limit realistic articulation arrangements for TVET programme graduates, alternative delivery arrangements could be structured to meet demand. For example, open and distance learning (ODL) delivery could extend programmes to student groups that are excluded because of quotas, the

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**India: unresolved constraints to articulation**

Although India is approaching universal provision of elementary education, the broad provision of secondary education is still an objective to be attained, but secondary participation is growing and is a high national priority. Within the current secondary education system at years 11 and 12 is located the Vocational Education Program (VEP), which is the vocational stream of upper secondary school and which runs in parallel to the academic stream. It is the largest TVET programme in India.

Around 30% of VEP graduates enter the job market within two to three years of graduation. However, experience has demonstrated that many students seek to proceed to further studies, especially to degree level at a university or a diploma at a polytechnic. In practice, however, effective pathways out of the VEP have proved difficult. Students coming from the academic stream get preference for admission to university and polytechnics because they better satisfy the entry requirements, which are set by individual institutions. Despite national policy providing that graduates of vocational courses should be given opportunities for

professional growth and career improvement through bridging arrangements, this has not been acted on broadly (*Government of India*, 1986/1992).

The whole question of articulated pathways for VEP graduates has been the subject of considerable debate in India since the early 1980s. There has been considerable pressure from students, parents and educators to improve arrangements. Some universities have moved to provide vocational subjects within their undergraduate degree programmes, but these subjects are not well connected to the studies in the VEP at this juncture. The use of flexible learning institutions, such as the Indira Ghandi National Open University (IGNOU) to assist in providing studies is seen as having great potential to address this demand (Mishra and Singh, 1998).

Clearly, the need for articulation in India is now well recognised and relevant policy is being debated. Changes to the economy and developments from the expansion of demand for secondary education may provide incentive for further refinement of articulation arrangements.

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constraints of employment or geographic location. Increasingly, the potential for programme delivery using the Internet and other flexible delivery mechanisms will make it possible to cater to students who are currently beyond the reach of educational institutions.

- Post-secondary institutions should be encouraged to codify credit transfer and recognise prior learning arrangements. This will help create an environment where articulation practices are the norm.

- Where appropriate, bridging programmes to facilitate articulation can be created. Frequently articulation arrangements are poor because there is a lack of continuity

between programmes. Carefully constructed bridging or conversion programmes might conveniently and economically be delivered through ODL. They might also be built on knowledge and abilities already attained, and address any deficiencies. For example, a polytechnic diploma graduate may desire to articulate to a related university degree, but be refused admission on the basis of shortcomings in mathematics and science. A specially designed bridging programme should be capable of addressing such difficulties.

- Co-operation on curriculum design should be encouraged. It may, in many instances, be possible for TVET institutions and universities to collaborate when making changes to curriculum so that there is more synergy between related programmes. Not only can such co-operation make articulation more effective, but in some instances credit transfer arrangements might also be enhanced. However, collaboration should not be at the expense of the overall objectives of any programme. If such an outcome were to result, it is likely that the standing of courses could be compromised, with the inevitable adverse reaction by stakeholders.

- Where entry to university ordinarily favours school leavers selected from the academic stream of secondary school, there could be a modest quota made available for the entry of TVET programme graduates based on merit. This may be a very difficult matter for developing countries to address when available funds to support education tend to be rationed out, and the perception that less meritoriously qualified applicants were being given preferential treatment would need to be worked through.

- In some countries it may be feasible for private post-secondary institutions to improve articulation possibilities by making available places that are unavailable in government-funded institutions. Moves in this direction should take place within the umbrella of a national qualifications framework and quality-control systems so that, regardless of the funding arrangements used to support educational institutions, a consistent process exists to ensure a satisfactory outcome.

## MOBILITY OF CREDIT AND LABOUR — SKILLS PASSPORT

Often individuals find themselves having to demonstrate their competency to undertake specific tasks in the absence of formal qualifications. This is an issue which commonly arises in the case of personnel who develop some skills and move around in the course of their employment, even from country to country.

Some countries, such as Malaysia and the Philippines, have accommodated this situation by instituting processes which test and assess the competencies of individuals to perform vocational tasks against defined national standards. This is effectively a form of recognition of prior learning (Alto et al., 2000). Such competency testing may constitute a substitute for formal qualifications.

Extending this concept to encompass the issue of a skills passport to record demonstrated competencies has been considered by a number of Asian countries through the ILO Asian and Pacific Skill Development Program, to regularise the supply of skilled workers to the Middle East. This initiative, proposed in 1988, sought to eliminate the need for separate skills testing of migrant workers by potential employers. It was intended that the skills passport proposal would be introduced on a trial basis in a number of countries, however this has not occurred (Azam, 1989). Instead, the ILO has

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**Promising signs from the Pacific**

In Samoa, under a current AUSAID-funded Institutional Strengthening Project for the Education Department of Samoa, some TVET programmes in secondary schools are being developed, with a view to facilitating the articulation of students to further studies at the Samoa Polytechnic. There are, however, already examples of articulation in Samoa. Students graduating from the Samoa Polytechnic with a Diploma in Business (Tourism) can articulate to the degree programme at the National University of Samoa. Also Samoan students who complete a Certificate in Horticulture are able to continue their studies for a diploma at the university of the South Pacific. The university has various campuses located in a number of different Pacific countries, with the agriculture faculty located in Samoa.

In 2000, there was a memorandum of understanding (MOU) signed by the Samoa Polytechnic and the National University of Samoa, which formalises the co-operation between the institutions. The MOU provides for the establishment of a joint institutional committee of senior staff, which will also work together on the accreditation of academic programmes.

As well, there exists a Commonwealth of Learning project to assist in the development of TVET programmes for Pacific island nations using distance learning materials. The New Zealand Open Polytechnic is producing the actual learning materials. One of the objectives of this project, which was agreed to by the Education Ministers from Commonwealth island nations in the Pacific, is that this initiative should also co-ordinate the accreditation process between the countries involved (Lene, 2001).

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subsequently supported the development of "regional model competency standards" in Asia to provide guides for the scope of skills and knowledge required for occupations, which might be used as a basis for vocational training programmes, testing and certification.

The EUROPASS programme, currently being implemented by the European Union (EU), is another example of a skills passport. It follows on from the Petra and the Leonardo I and II programmes which facilitated exchange of trainees between European Union states in the 1990s. EUROPASS aims to give employed workers the opportunity to gain skills in another EU state, and have that training recognised and documented. The vocational training activities undertaken by participants in the EUROPASS programme are negotiated between the partners in the country of origin and the host country. Each group of trainees is accompanied by an instructor. Unfortunately, the EUROPASS programme does not extend to individuals or full-time TVET students at this stage.

Encouragement for initiating the EUROPASS programme, has come from the relative difficulty in comparing the value of formal TVET qualifications issued by the different

authorities in the EU. The EUROPASS has also been seen as a step towards improving linkages between different European TVET systems and is perceived to have some parallels with the European Credit Transfer System (ECTS) used by many universities in Europe to facilitate exchange of individual students between member state universities. The ECTS system has been operating since 1985 on the basis of a mutual understanding, trust and agreement on a points assessment process. There is a hope that, in time, the EUROPASS system will replicate some of the features of ECTS (Kristensen, 1998; Thiele, 1999).

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### Singapore: the talented island

Singapore is a compact, strategically located, tropical island state that has no riches in minerals, nor even the capacity to feed itself given its small land mass. It emerged from the colonial era, with little industry and an education system not geared to address the demands of a society that intended to engage the world and prosper. The key resource in Singapore is the capacity and industry of its people, who now number in excess of three million. Over recent decades, the talents of the people have been developed through the Singaporean education system to enable that state to become a centre of high technology industry. Singapore has also emerged as a key regional hub for financial and other service industries.

The Singapore government has focused on meeting market-driven demands of manufactured exports and service industries in the context of maintaining social harmony. In particular, Singapore has continually moved to increase the overall level of skills as it has shifted further to higher value-added exports. These aspirations have been reflected in evolutionary changes to the education system (Ashton et al., 1998).

In 1980, the New Education System was introduced, which was based on merit-based streaming of students exiting primary school. Those not so academically inclined were directed into vocational courses after the end of year 10, with the bulk of secondary students entering a polytechnic after year 11. Only the most gifted proceeded to university. This was followed in 1986 by the deliberations of the Singapore Economic Committee, which recommended that there should be further improvements, including an upgrading of the median level of education of the Singaporean workforce, provision of ongoing workforce training and retraining and expansion and improvement of all levels of post-secondary education.

Singapore's vocational education system is now very well integrated with the education system overall, and there is wide provision for TVET graduates to advance to further studies. For example, for those students who complete Institute of Technical Education skilled worker or technician programmes, there is the opportunity to commence a paraprofessional diploma course at one of the four well-equipped polytechnics. Likewise, students graduating from a polytechnic with a diploma enjoy considerable encouragement for further study, including income tax concessions for tuition fees. There are now some places available in government university programmes for the top achievers from the polytechnics, and more recently the government has supported the establishment of an Open University, which is linked to UK Open University.

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Since the 1980s, the Singaporean government has encouraged the delivery of higher education programme in-country by foreign universities, in conjunction with local professional associations (like the Singapore Institute of Management), and non-government educational institutions (like the LaSalle-SIA College of the Arts). As a result, a number of universities from Australia, the UK and the US deliver a range of degree programmes, with the main targets being polytechnic diplomates. The presence of these universities in Singapore has greatly widened the opportunity of polytechnic graduates to undertake further studies, and significantly reduced the need for students to go abroad for further studies.

Another interesting innovation is the Virtual College operated by Singapore Polytechnic since 1997. The Virtual College delivers a range of interactive learning modules over the Internet. It is focused on providing continuing education and lifelong learning, as well as supplementing conventional lectures with supporting material. In a number of instances it is possible to undertake specific modules without having to attend any formal classes (Cheong et al., 2000).

So successful has been the integration of education and training with the economy that a recent World Bank study on Singapore found that the achievement of a well-balanced and relevant system of education was the outcome of carefully developed government policy and subsequent implementation. A rare compliment from that body (Selvaratnam, 1997).

## REFERENCES

Alto, Romulita et al. *Training Systems in South East Asia*. Adelaide: NCVER, 2000.

Ashton, David et al. *Education and Training for Development in East Asia*. London: Routledge, 1998.

Ashton, David and Francis Green. *Education, Training and the Global Economy*. Cheltenham, UK: Edward Elgar, 1996.

Azam, Farooq. "The Skills Passbook for Migrant Workers." In *Occupational Classification of Migrant Workers*. Islamabad: ILO Asian and Pacific Skill Development Program, 1989.

Cheong, D., I. Charleson, and A. Jolliffe. "The Singapore Polytechnic Virtual College Enters the New Millennium." *Journal of Teaching Practice*. 2000. <*www.vc.sp.edu.sg/journals/VC.htm*> (24 January 2002).

Dougherty, Christopher. "Education and Skills for Development: Planning Issues." In *Technical and Vocational Education and Training: Proceedings of the Regional Seminar on Technical and Vocational Education and Training*. Manila: Asian Development Bank, 1990.

George, Nancy. Personal communication, University of Technology, Jamaica, 2001.

Government of India, Ministry of Human Resources Development. *National Policy on Education*. New Delhi: 1986/1992.

Haas, Adrian. *Trends in Articulation Arrangements for Technical and Vocational Education in the South East Asian Region*. Melbourne: Royal Melbourne Institute of Technology, 1999. <*www.unevoc.de/publications/pdf/rmit99.pdf*> (24 January 2002).

Keating, Jack. *Australian Training Reform — Implications for Schools*. Melbourne: Curriculum Corporation, 1998.

Kristensen, Soren. "Support for Transnational Mobility of Young People." In *Mobility and Migration of Labour in the European Union and their Specific Implications for Young People*. Thessalonika: European Centre for Development of Vocational Training, 1998.

Lene, Perive. Personal communication, Samoa, 2001.

Mishra, Arun, and D. Singh. "Linking Vocational Education at +2 Level with Higher Education." *Indian Journal of Vocational Education*, 2 and 3 (1998): 1-8.

National Working Party for VET in Schools. "Recognition of Achievement in VET in Schools: A Progress Report." *Training Agenda*, 8, no. 3 (2000): 21-22.

Ruffe, David. "Where are the Pathways Going?" In *Pathways and Participation in Vocational and Technical Education and Training*. Paris: OECD, 1998.

Selvaratnam, V. *Innovations in Higher Education — Singapore at the Competitive Edge*. Washington: World Bank, 1997.

Thiele, Peter. "The Europass System in Germany — The Europass from 2000: Takeoff for a European Certificate System." In *New Challenges in the Cooperation between Education and Training and Working Life*. Finland: Ministry of Education, 1999. <*www.minedu.fi/julkaisut/newchall.pdf*> (24 January 2002).

UNESCO/ILO. *Technical and Vocational Education and Training*. Paris/Geneva: UNESCO, 1964.

UNESCO. *Technical and Vocational Education and Training: A Vision for the Twenty-First Century*. Recommendations made at the Second International Congress on Technical and Vocational Education, Seoul, April 1999. <*www.unevoc.de/congress/pdf/reco-e.pdf*>

# CHAPTER 12

## THE NEED FOR STAFF TRAINING AND RETRAINING

*Marvin E. Lamoureux*

### INTRODUCTION: THE CONTEXT

Regardless of the size or economic state of a nation, there is a resurgence of demand for technical and vocational education training (TVET) services at the community and district levels, as well as at the provincial and ministry or federal levels. When these demands are found to be factual and a positive response is required, the decision-makers are normally faced with three major issues:

1. *Resources:* The availability of resources to meet the ever-increasing TVET need always appears inadequate.

2. *Instructional, ancillary and administrative staff:* The individuals responsible for producing and delivering the TVET services need to be initially trained or, at the very least, continually re-trained to meet changing global standards.

3. *Delivery methods:* A decision must be made on how to implement TVET services delivery method that is more effective (i.e., meets the needs of the clientele) and efficient (i.e., attains TVET objectives at the least possible cost).

In order to respond to these issues, individuals involved in TVET have come to realise that open distance learning (ODL) and the components inherent in this delivery method are proving to be highly adaptable for staff training and re-training requirements. Furthermore, these TVET professionals are currently adapting ODL to produce cost-effective outcomes associated with the development and implementation of the following:

- An efficient demand-driven TVET sector model involving a cost-effective use of ODL

- A needs analysis/identification methodology incorporating a labour-market information system (LMIS) to clearly define stakeholder requirements (employers as well as learners)

- Regional, national and local programme and course curriculum

- Skills standards, testing and certification (SSTC), prior learning assessment (PLA) mechanisms and learner knowledge and skill mobility enhancements (horizontally

across occupational categories as well as vertically through higher education and training levels)

- Effective TVET/ODL institute administrative systems, including an educational management information system (EMIS)

- Instructional design models (programme/course planning, instructional techniques and evaluation) and programme/course delivery methods involving formal (institute-based), non-formal (employer/NGO-based) and informal (family/mentor-based) training structures, including equitable opportunities related to gender, ethnic and other disadvantaged groups

- Programme and institutional evaluation and quality-control techniques as well as related accreditation activities

- A variety of research activities covering the above components, as well as foreseeable interventions having a potential effect on the TVET sector and on the use of ODL

Thus, not all TVET needs come from the community level. As noted above, TVET staff must also be trained to cope with institutional and sector-level needs. Unfortunately, not only do training/re-training requirements cover a wide range of knowledge and skills, but the individuals who can perform these tasks need continual upgrading. However, as with any organisational structure, these individuals have limited time, are beset with their day-to-day job requirements and the costs of bringing individuals from throughout a country or district for training becomes less and less feasible. An answer to this challenge is ODL, which is becoming both a feasible and a practical training delivery method.

## A TRAINING IMPERATIVE STRUCTURE

A "training imperative structure" has been formulated to help individuals think about how they want to rationalise their training decisions and how those decisions will best respond to expressed TVET needs. In reality, each nation must have a multitraining response mechanism at one of three TVET levels: sectoral, institutional and local. All three levels must be addressed by government policy-makers wishing to improve sector TVET services in the short- (less than four years), intermediate- (four to five years) and long-term (more than five years). These services could include quality assurance, increased access and more relevant and demand-driven programmes and courses, all delivered through the implementation of ODL (Lindell, 2001).

### Sectoral level training needs

TVET sectoral improvements normally involve the development and implementation of one or more of the following:

- A demand-driven TVET system (replacing a traditional supply-driven system)

- An LMIS and/or an EMIS

- An SSTC structure, a PLA model and a programme/institutional accreditation mechanism

- An expanded TVET outreach system involving the implementation of innovative and culturally acceptable training delivery methods into rural areas for women and other disadvantaged groups and/or into the non-formal and informal training sub-sectors

It has become clear that these worthy endeavours continue to have both development, implementation and sustainability problems. Compounding the sustainability issue is a noticeable change in the broadening of TVET project objectives, activities and impact expectations. This has led to increased implementation complexities as policy-makers realise that a greater shift to system concerns is required (e.g., strengthening organisational structures, investing in instructional development, enhancing teacher training and fostering institutional development). However, it is not enough to simply pour external human and capital resources into these projects without considering the types and form of country-based human resource development and training interventions that must occur.

From the perspective of ODL, the training required at the sectoral level must respond to a number of the following issues:

• The magnitude of differences from existing practices and beliefs (e.g., moving from a supply to a demand-driven TVET system)

• The scope and level of change implementation difficulty (e.g., a specific activity, an organisational change or a sector-based restructuring)

• The kinds and number of objectives to be achieved, along with their implementation timelines (e.g., size and type of change interventions)

• The amount of uncertainty involved in applying implementation activities at the local, provincial and national levels

• A need for inclusion of more sophisticated ministry and institutional management methods

Immediate training needs should be satisfied at the sectoral level, especially for those countrywide TVET interventions that will, in turn, drive the further introduction of institutional and staff operational interventions. In the end, knowledgeable and well-trained individuals must be in place, for "training by itself will not be effective, unless the conditions for the deployment of learned skills are favourable" and "the number one problem of training…the mismatch between training and jobs" is rectified (de Moura Castro, 2000).

## INSTITUTIONAL LEVEL TRAINING NEEDS

Inasmuch as sectoral TVET restructuring initiatives concentrate on changing the focus of the system, thus demanding a certain type of training needs requirements, the institutional level presents its own ODL training requirements and specifications. These training activities concentrate on organisational restructuring and related interventions that will help link a TVET institution operating within a community, or a number of TVET institutions within a state, province or region, to government and community stakeholder output expectations. In this manner, the institutions, as well as the sector, will become more responsive (demand-driven) to stakeholder requirements and TVET delivery expectations — with the expectation of raising institutional efficiencies surrounding the use of its human and capital resources. From the perspective of TVET delivery of services, it is at this operational and organisational level where the system must expect ODL innovations to take place. It is one thing to have a number of sector level studies commissioned that clearly demonstrate the need for a TVET/ODL implementation schedule; it is quite another to have the trained personnel and resources to accomplish this feat at the local level.

**Jordan: a TVET sector restructuring project**

A review of Jordan's supply-driven TVET sector led the government to request assistance to undertake a strategic restructuring that would meet the needs of three key stakeholder groups: government, industry and labour. Between 1994 and 1999, the Canadian International Development Agency (CIDA) funded a project that generated a TVET strategic plan involving the private and public sectors. It was fully adopted by the Government of Jordan. Additionally, there were a number of institutional studies leading to organisational restructuring of the TVET institutional management and information system involving three key TVET suppliers: Ministry of Education's secondary schools, Ministry of Labour's vocational training centres and Al-Balqua' Applied University (manager of Jordan's community college system). Institutional capacity-building at the country's training and education co-ordinating agency — the National Center for Human Resource Development (NCHRD) — was also necessary. Furthermore, the project facilitated an initial shift in programme and curriculum development using a competency-based education/DACUM (developing a curriculum) methodology. This forced an increased recognition of the importance of linkages between TVET institutions and employers. The project also provided assistance in the development of a national Instructional Resource and Curriculum Development Center (IRCDC).

Between 2001 and 2004 two new projects will build on the outputs of the strategic plan to:

• Support the formulation of national policy directions which focus on a realignment of Jordan's TVET system with the demands of a modern economy and to further strengthen the capacity of respective TVET providers to conform to this realignment at the sectoral, institutional, management/ instructional and programme levels.

• Focus on building a capacity within NCHRD in the fields of occupational classification, LMIS and vocational guidance and counselling. Outputs from this initiative will be fundamental to the formulation of TVET policy and programme reform by TVET providers.

As an example, local TVET institutions may be designated to develop education and training partnerships with local stakeholders, including private and public sector employers, NGOs and community organisations. These ministry directives to TVET institutions are being woven into their mandate and are now becoming commonplace. Based on a study of public/private training partnerships in 14 countries, it was concluded "…that many countries are developing new types of partnerships because they are seen as strategic in the sense that they can have a significant impact on the development of skilled manpower and on social and economic development" (Coursey, 2000). It is through these partnerships that ODL is introduced as a cost-effective training/re-training system.

However, the desire to have TVET providers (training centres, secondary schools, community colleges, institutes of technology, etc.) successfully implement stakeholder-driven changes is predicated on their ability to effectively manage the institution itself. This outcome also assumes that the managers of the facility have the knowledge, skills and experience to, among other management activities:

- Understand, interpret and implement workforce data and information supplied by an LMIS

- Form active stakeholder programme advisory committees (PACs) composed of employers, community and union representatives, and other interested parties

- Use the LMIS and PAC input to develop new programmes and courses and to update and upgrade existing programmes and courses

- Implement innovative outreach ODL delivery modes and restructure course curriculum relative to the needs of the learners involved in ODL

- Reconfigure the use of instructional facilities, equipment and supplies, as well as human resources (administration, instructors and staff) to maximise the number of learners served

- Develop and implement quality-control mechanisms to evaluate the cost-effective use of capital resources, instructor behaviour, learner employment/self-employment outcomes after graduation and stakeholder satisfaction with the institution, and its supply of TVET services

- Develop co-operative education, work experience and other student internship opportunities using PAC and other stakeholder resources in the local area

- Organise sustainable and revenue-generating production units within the TVET facility and grounds to help learners reinforce their classroom and laboratory knowledge/skill base prior to entering the workforce or self-employment (Hoerner and Wehrley, 1995)

All of the above functions require extensive training of institution administrators, including principals, vice-principals, department heads and head lecturers. It is not enough to develop a system-wide policy that recognises the need for excellence at the institutional level. The ministry involved must be prepared to finance ongoing and continual training for institutional administrators to achieve the desired TVET sector outputs (Gasskov, 2000). Inherent in the requisite managerial functions is the expectation by the external stakeholders, the instructors and the learners that the institution has well-trained and knowledgeable innovative administrators.

The outcome of inadequate training at the institutional level in a number of developing nations has led to a concurrent centralisation of decision-making at country's provincial/state level, or even at the central government level (Lamoureux, 2000). In fact, local decision-making about programme and course development, facilities renovation, equipment purchase, maintenance, instructor hiring and training, adoption of innovative training and outreach delivery and ODL methods is rarely found at the local or institution level. If the administrators are poorly trained one could expect little more. Yet, the understanding and adoption of true TVET innovation must occur at the local level for it to be relevant to the learner.

### Local level training needs

For the most part, this training paradigm level refers to TVET instructor training and re-training needs. However, other TVET-related professional and semi-professional staff

must also be involved in the training paradigm: instructional assistants for lab and workstation remedial instruction and equipment maintenance, work placement, student advisors and counsellors, librarians and other ancillary personnel that contribute to a TVET learning structure and delivery system, including outreach/ODL activities.

A number of studies on the topic of improving TVET invariably focus on some form of a strategic matrix surrounding the need to "improve the parity of esteem between

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**Guyana: teacher training through ODL**

This CIDA/Ministry of Education project has a four-year implementation timeline (1999-2003) and is, for the most part, completely concerned with using ODL techniques to:

- Strengthen major stakeholder capacity by establishing and strengthening ODL systems delivery mechanisms and institutions in Guyana (i.e., Cyril Potter College of Education, Guyana In-Service Distance Education, Institute for Distance and Continuing Education, National Center for Educational Resource Development (NCERD) and learning resource centres in a number of the country's 10 regions)

- Establish an EMIS system that is compatible for all major stakeholders involved in ODL

- Develop an ODL educational management programme by revising and adding ODL modules from a Commonwealth Secretariat educational management training manual and by developing ODL "train-the-tutor/mentor" workshops in conjunction with the NCERD

- Support the continued development of ODL materials

and implementation of "pre-foundation" and "foundation" programmes for teacher-trainees in selected outlying regions, plus continuing the revision of materials for the ODL certificate programme for untrained teachers

What makes this project so interesting and important is its purpose and implementation methodology. The purpose is to strengthen both the basic teacher-training structure and the educational management training structure in Guyana. It is also understood that, for the most part, only an ODL delivery mechanism will be acceptable by stakeholders, be cost-effective and, in the end, allow for component sustainability after the project completion date. That is, it is simply impossible, due to financial and geographic constraints, to bring teachers and school administrators to Guyana's capital city of Georgetown for full-time studies. Thus, the project uses an ODL implementation methodology to train Guyanese professionals to, in turn, develop and adopt a continuing ODL delivery mechanism as an acceptable method to acquire teacher and administrator knowledge and skills.

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vocational and academic education" (Young, 2000). Within this matrix concept, there are normally four key strategies:

- Improving links with higher education
- Improving links with employers
- Improving TVET curriculum
- Raising the status and qualifications of vocational teachers and trainers

The demands on TVET teacher competence, professionalism, attitude, values and work ethics within the context of new and emerging technologies in their countries, within the region and through marketplace globalisation, have become enormous. In both developed and developing nations, quantitative expansion of TVET has put significant pressure on instructor recruitment and quality. Furthermore, the role of TVET instructors is undergoing significant, if not radical, change. They are no longer just dispensers of knowledge, skills and experience (all of which can become quickly outdated). TVET instructors are also expected to:

- Attain expertise in course, programme and curriculum development and become student career advisors while developing and maintaining linkages with local employers for student work placements or internships
- Become human and capital resource managers
- Acquire computer hardware, software and Internet skills
- Be able to integrate innovative TVET techniques while conducting their instructional duties

ODL has given new energy and has become a required delivery mode to meet many of the critical needs of TVET teacher education and training. As noted by Basu (1999) and Petty (1999), the objectives of ODL in these circumstances should include:

- Updating and upgrading a large number of TVET instructors, their lab technicians and other key professional/paraprofessional and staff personnel responsible for TVET institutional management and quality improvement
- Having convenient and continuing access to initial and advanced skills training that has immediate relevance, is cost-effective and that reflects major concerns of the country, province/state and local stakeholders
- Contributing towards developing and sustaining a cost-effective ODL resource and delivery centre
- Promoting innovations, research and development for improvement of quality and relevance in TVET, including ODL
- Establishing a network of similar organisations within the region to promote efficient production and delivery of ODL, along with a concurrent reduction in redundant activities

Improving TVET is intimately related to raising the quality of vocational instructors. Although various human resource development reform patterns are emerging, reflecting differing national improvement strategies, a much greater emphasis is still being placed on improving the quality of TVET instructors in the formal sector than trainers responsible for workplace training in the non-formal sector. Still less is applied to the train-the-trainer requirements involved in family, village micro-enterprises and small and medium enterprises (SMEs). This strategy is erroneous and counterproductive to a country's wealth generation and poverty alleviation objectives, especially in the rural communities.

**Caribbean Technical Teacher Training Programme**

The Commonwealth of Learning (COL) has been developing a core curriculum to provide TVET teacher and administrator training by ODL in countries where an expanding TVET system has resulted in acquiring technically competent staff who lack teaching skills. Programme modules could also be developed or modified for use by enterprises that wish to use existing staff as trainers. The documentation was produced with TVET representation from 14 countries and substantive input from eight Caribbean technical colleges and administrative bodies, in collaboration with CARICOM. The programme provides distance education learning activities for TVET instructors and industrial trainers and addresses the core pedagogical needs of the teachers in the field. The curriculum modules are divided into three conceptual categories:

**Section A: Pedagogical**
1. Safety
2. Educational Theory and Practice
3. Instructional Techniques
4. Education Technology (renamed)
5. Learning Resources

**Section B: TVET**
1. Language and Communication
2. Administration and Management of TVET
3. Workshop Organisation and Management
4. Applied Computer Studies
5. Entrepreneurship

**Section C: Teaching**
1. Practical Teaching
2. Action Oriented Research (new module)
3. Learning Materials Review

The Technical University of Jamaica (UTech) agreed to begin offering the programme in September 2000. UTech is also responsible for quality assurance and will establish the general management procedures for the implementation of the programme in the various countries. The procedures will form the basis for a franchising co-operation between UTech and institutions in CARICOM countries. Those countries wishing to start teaching the programme would provide UTech with information about tutors and co-ordinators. COL/UTech will develop a standardised form to collect these data and the region will adopt common standards and teach a common curriculum. The programme and its implementation will be overseen and monitored by COL and UTech, who will issue a joint award. The UTech franchise will offer programme students the ability to transfer and to articulate into other award programmes. Awards will also be jointly offered by institutions nominated by the Ministries of Education in the individual countries. UTech involvement provides immediate portability of the qualification throughout the Caribbean. Programme materials are designed for open and flexible delivery with individual countries determining the most appropriate delivery methodology to suit their particular context and agreeing to provide COL with information about the provision of TVET in their countries. COL will post this information on its TVET Web page to become the prime source of information about programme developments. Furthermore, COL will also post on its Web site information about the curriculum as it is modified.

These smaller organisations have become recognised for their enormous contribution to a nation's GDP and employment opportunities. They, along with larger employers who have training departments, must be recognised for their contribution to a country's human resource knowledge and skill base (Herschbach, 2000). Thus, a more balanced allocation of instructor training (formal sector), training-of-trainers (non-formal sector) and on-the-job mentors (informal sector) much be achieved (Nonis, 1998).

## OBSERVATIONS

The need for training in order to develop innovative TVET activities appears to be self-evident. What is not necessarily self-evident is how to balance unlimited training and staff re-training demands with limited resources. As TVET interventions become more complex and the requirement for higher-quality human and capital resources proportionally increases, one should aim at rationally preparing the system, its institutional structure and its professionals to efficiently develop and implement macro innovations on behalf of the greatest number of stakeholders. Secondly, as the system becomes more relevant, cost-effective and, for TVET, more demand-driven, efforts must be applied (sometimes concurrently) to local institutions and their administrative personnel in order to make the innovations relevant to local stakeholders. Finally, the individuals who must truly operationalise TVET innovations must become the core for lifelong education and training implementation work plans.

In order to respond to these needs and compensate for the inefficiencies behind traditional learning methods, TVET decision-makers must begin to realise that the driving force behind initial training as well as re-training involvement is a shift towards open, flexible and distance TVET delivery methods. The method must be open so that individuals can learn on their own time, at their own pace and in private without the experiencing classroom-style failure or embarrassment. It must provide flexible learner-centred involvement by meeting individual learning needs, helping learners take on more responsibility, make effective use of limited instructional resources and allow for individual learning styles. Finally, an ODL method must be brought to the individual through a distance education delivery system that is appropriate for the learning outcomes required and attractive to the cultural framework of the learners, their trainers and the providing institutions.

# REFERENCES

Basu, C.K. "Challenges of the 21st Century for Technical-Vocational Education and Training from Global, Regional and National Perspectives." In *Workforce Preparation in a Global Context*. Finland: Institute for Educational Research, University of Jyvaskyla, 1999.

Calder, J. and A. McCollum. *Open and Flexible Learning in Vocational Education and Training*. London: Kogan Page, 1998.

Coursey, Sharon. "Education and Training Partnerships; An Enabling Framework." In *Workforce Preparation: An International Perspective*. Ann Arbor, US: Tech Directions Books, 2000.

de Moura Castro, Claudio. "Setting the Record Straight: A Synthesis." In *Vocational Training at the Turn of the Century*. Berlin: Peter Lang, 2000.

Gasskov, Vladimir. *Managing Vocational Training Systems*. Geneva: International Labour Office, 2000.

Herschbach, Dennis R. "Training Partnerships in the United States: Linking Enterprises and Government." *International Journal of Vocational Education and Training*, 8 (2000): 89.

Hoerner, James L. and J.B. Wehrley. *Work-Based Learning: The Key To School-to-Work Transition*. New York: Glencoe, 1995.

Lamoureux, Marvin. "Vocational and Technical Education in a Transitional Economy: A Case Study of Laos." In *Workforce Preparation: An International Perspective*. Ann Arbor, US: Tech Directions Books, 2000.

Lindell, Mats. "Trends and Development in VET Systems: Flexibility, Transferability, and Mobility Issues." *International Journal of Vocational Education and Training*, 9, no. 2 (2001): 33.

Nonis, Eustace A. *Skills Promotion Funds*. Manila: Asian Development Bank, Manila, 1998.

Petty, G.C. "Preparing Vocational Teachers Via e-learning: A Solution To The Impending Teacher Shortage." *International Journal of Vocational Education and Training*, 7 (1999): 23.

Young, Michael. "Improving Vocational Education: Trans-European Comparisons of Developments in the Late 1990s." In *Strategies for Reforming Initial Vocational Education And Training In Europe*. Finland: Institute for Educational Research, University of Jyvaskyla, 2000.

# CHAPTER 13

## CONNECTING THE DOTS: PLANNING AND MANAGEMENT STRATEGIES IN TVET

*Dick Scales*

### A GROWING INITIATIVE: OPEN LEARNING IN TVET

Creating a new initiative in open learning is an exciting prospect. Traditional technical and vocational institutions are joining a large number of institutions around the world that have recognised that open learning is efficient, effective and provides greater access to quality programmes for more students. The leadership and faculty of traditional institutions want to make a difference. They want to provide greater access to their training programmes. They want to use their scarce fiscal and human resources in the most effective way possible. Open and distance learning can increase their ability to meet that goal.

Traditional approaches to the delivery of technical and vocational programmes will continue to be important, and in many instances will be the only way in which certain skills can be imparted; however, increasingly we see a mix of open learning and face-to-face instruction. Open learning can teach theory and prepare students to understand the nature of the practical skills they need to acquire. Traditional face-to-face instruction can build on the open learning and provide the hands-on training of practical skills. Adding open and distance learning (ODL) programmes, or including open and distance elements into existing programmes, allows institutions to better realise their mandates. ODL has a long history and around the world practitioners have come to recognise that the application of ODL systems is an effective way to address both basic and continuing training.

There is no doubt that demand for training will increase as the complexity and sophistication of the workplace grows. To ensure the skills required of modern economies are available, it is generally recognised that continuous development of the workforce is necessary and must be identified as a basic part of education and training policy. Governments recognise that traditional approaches to the delivery of all education and training needs must be reviewed and that new, more efficient approaches need to be introduced to allow the provision of training within the capability of government to fund it.

## Apprentice training in Canada: the focus of open learning

The application of open learning to apprenticeship training is a "win/win" response for all stakeholders:

- Open learning expands available formal training time for apprentices from 4 to 10 weeks per year of apprenticeship to virtually 12 months per year. This makes for improved training efficiency on the part of educators and benefits the employers' productivity.

- Well-designed, modular, competency-based open learning focuses on the achievement of skill proficiency, regardless of the time it takes to learn it. Further, by its "openness," there is greater visibility of the competency standards required, greater consistency in the training received and greater opportunity for identification of competencies common to more than one trade.

- Instructional technologies have the capability of linking apprentices studying the same trade in diverse locations across the province and providing a consistent instructional message over a short period of time.

- Instructional technologies used in open learning approaches improve accessibility to apprenticeship training in four ways:

  – Geographic access: Provision of training in, or close to, the apprentice's own community

  – Equitable access: Increased opportunities for equity groups to participate in apprenticeship training

  – Resource access: Access to world-class expertise and resources which can be "beamed in" to remote locations

  – Community presence: Increased visibility of training in the community and consequently greater promotion of the value of occupations in the trades

- If well-designed, triple usage of open learning materials is possible for apprenticeship training, high school pre-apprenticeship training, journeyperson upgrading.

- If done right, open learning can complement on-the-job practice of trade skills and integrate the "theory" of the trade with practical skills on a day-by-day basis. Training is immediately applied and "relevant" in that it is practised on the very equipment used at the work site.

The flexibility of open learning approaches to apprenticeship training implies portability of the training and opportunities to ladder upward into other post-secondary educational credentials as well as downward into secondary high school diplomas.

Excerpted from a document prepared by Open College (British Columbia, Canada), 1994.

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Historically, public institutions were slow to adopt ODL methods, but today there are only a few institutions that are unaware of the potential of open learning. For much of the 20th century, in locations as separate as Canada and New Zealand, there existed a successful record of ODL for technical and vocational education and training (TVET). The private sector has been a strong advocate of open learning for its training programmes, and public institutions have a long and successful record of ODL too.

## SUCCESS STORIES

It is easy to dismiss the notion that ODL can be applied to TVET programmes with their focus on hands-on skills. It must be recognised that there are many examples of programmes in the manual skills trades that have been delivered through open learning. Obviously the hands-on training, as has been pointed out elsewhere in this book, must be accommodated in innovative ways. Often the hands-on training is provided through methods such as partnerships with industry and the use of facilities in institutions when students in traditional programmes are not using them.

Of course programmes that do not require major practical components lend themselves more readily to delivery through ODL. The Open Polytechnic's BIZ scheme provision has proved extremely popular, mainly because the distance mode allows people to fit their study around the demanding pressures of running or planning their own small business enterprise.

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**Supporting training in small business**

National open and distance learning institution The Open Polytechnic of New Zealand is supporting basic skills training for current and prospective owners and managers of small- and medium-sized business enterprises (SMEs) through a special government-funded scheme called BIZ. The scheme offers free training on a national basis through a range of providers, with The Open Polytechnic offering flexible distance options for people who cannot or do not wish to access contact provision.

SMEs are a key area for workforce upskilling in New Zealand's drive to meet the demands of the emerging knowledge economy. It is estimated that around 85% of all New Zealand enterprises fall into the SME category (employing the equivalent of five or fewer staff). These include a large number of the country's export businesses.

Since the BIZ scheme's inception in mid-1999, nearly 3000 people have studied through The Open Polytechnic under a range of course options. As part of the initial course development, The Open Polytechnic conducted research on the needs of small businesses, which indicated many owners and managers needed new skills as their business grew and planning became an increasingly important factor.

The core material focuses on business and financial planning and moves through three main areas: day-to-day business management; planning and monitoring; and making a business grow.

*Continued...*

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Currently four courses are offered targeted at specific areas of SME activity:

- Planning to start a small business
- Planning to start an export venture
- Running an existing SME
- Women in small business

The purpose of the courses is to provide hands-on practical assistance and guidance for people in small business ventures, rather than formal certification. Consequently, the learning materials are designed as a flexible resource package, enabling learners to pick and choose those elements that meet their specific business needs. Rather than providing all of the information that might be needed, the packages identify key topics and information requirements, then guide learners to more detailed information sources.

Checklists help learners clarify their information resources and gaps and relate information to their own enterprise. Profiles of successful New Zealand small businesses are included to support motivation and provide a wider context for thinking about such ventures.

Rather than a formal assessment, learners are able to develop and submit their own business or export plan for comment by expert lecturers in the small business field. Guidelines for writing plans and real-world examples of successful plans are also included in the resource materials.

Each course consists of 12 to 15 modules and takes a total of 100 hours to complete, usually over a period of three to four months (but with a 12-month enrolment period). Reviews of course content are ongoing and changes are made accordingly, including the introduction of new material to keep abreast of new technology and business trends. The courses are suitable for a wide variety of people, including those who handle the accounts of a partner's business but do not see themselves as managers.

## PLANNING FOR AN ODL PROGRAMME

In recent years the advent and convergence of sophisticated computer and communications technologies has spurred the growth of ODL. Technology now allows for significant economies in the development of ODL programmes, and where the networks are available, it adds to the toolbox of the instructional designer. However, sophisticated technology is not essential to the development of an ODL programme, and if it isn't available that shouldn't detract from considering ways to implement programmes to address unmet needs.

Earlier chapters have outlined some specific elements of ODL systems. However, for the practitioner about to embark on developing an institution's first open learning programme, it is important to recognise that these primary and basic elements are the same as for traditional, face-to-face programmes: don't be intimidated by the depth of knowledge about ODL.  In many ways it is simply a different way of looking at what traditional institutions already do:

- *Know your stakeholders and what is required to satisfy their needs*. The personal support provided by key individuals who will approve programmes, provide budgets or accept graduates. As early as possible it is critical to develop a basis of trust and understanding about what will be done by whom and with whom. Make key stakeholders part of the process; develop in them an interest in a successful outcome.

- *Identify the training need*. There are many ways in which this can be accomplished. (Chapter 5 is devoted to the topic of needs analysis.) Here, too, it must be remembered that your basic knowledge of your community's training needs must be appreciated. "Go with what you know."

- *Know your learners and their abilities*. Once needs are identified, develop a profile of the learners. What is the level of literacy? Are they likely to be self-starters and motivated to complete an independent learning programme? Will they need some assistance in understanding what is expected of them? Can they afford the costs? How will they learn about the programme?

- *Define the curriculum*. The initial programme will be a pilot to assess how an institution might deliver programmes using ODL. A generic topic for which there is likely ample choice of existing distance learning materials would be a sensible initial effort. This initial programme should be one or two courses that address a well-defined need, has support from internal and external stakeholders, and does not require elaborate additional resources for aspects such as hands-on training or an industry placement. Simplicity must be the underlying factor.

- *Ensure student and administrative support systems*. This is an easy area to overlook. Basic systems such as registration and fee collection, examination and student records need to be determined, and the way in which these items will be handled must be carefully considered. The priority must be on utilising the existing institution's systems. Don't waste resources creating parallel special systems.

- *Design a delivery system*. The delivery system must reflect the resources of both the institution and the learner. (There is little point in implementing a state-of-the-art Web-based system if the client group has little or no access to the Internet!) Generally speaking, an initial foray into ODL is best served through a simple delivery system that minimises the possibility of technical failures. This tends to local centres for contact with tutors, pick up and delivery of assignments and instructional materials, mail and telephone communication. More sophistication will be easier to add as initial successes become a base upon which to build additional ODL programmes.

- *Use appropriate instructional design*. Use models that will not intimidate the learner and are suitable to the content. Language levels and cultural context are important if, as is recommended, you use existing content from another jurisdiction. Any adaptation should ensure that the level and style of language is suitable and that the examples and the context of any illustrative content fits with the local environment.

- *Articulate for credentials*. Of critical importance is the equivalency of the ODL course to existing face-to-face courses that teach the same content. Through the provision of identical credentials, an institution is stating that the ODL programme is not inferior or second rate in comparison with more traditional instruction. It is important that your first ODL programme includes this aspect of comparison.

- *Secure and train qualified staff*. Staff with an interest in ODL and who have the necessary academic qualifications should be retained to provide the instructional

support. The nature of ODL requires the faculty member to act as a tutor, supporting and assisting the student and grading assignments and projects. The tutor in ODL programmes is not the instructor in the sense that knowledge is imparted. The ODL materials do that. This is an important difference that many instructors new to ODL have difficulty understanding. A carefully designed training programme is required to assist experienced faculty to understand the role of tutor.

## IMPLEMENTING AN OPEN LEARNING PROGRAMME

The practitioner new to ODL and wanting to implement an open learning programme should keep in mind the issues that have to be addressed are no different from those that need to be addressed in traditional face-to-face institutions. Experienced TVET administrators can easily implement open learning programmes. The skills and experience gained from traditional methods are quite transferable.

Those educational leaders who are interested in introducing ODL into a traditional institution should not be afraid to try something. Easier said than done? Perhaps, but others have done it. It may not be easy, but, with careful thought and by drawing upon the experience and commonsense of technical and vocational administrators, it is possible to introduce open learning into a traditional institution quickly and effectively.

### *Start small*

Select as the first open learning course to be offered a topic that is small, contained and complete — a course for which you know there is a large unmet demand and one which will attract a significant number of qualified applicants. In selecting this first course there is no need for an extensive needs analysis. Most TVET administrators are acutely aware of the training needs in the region in which they operate. Pick a sensible option to help get internal support as well as support from external stakeholders (which may be required or "wise" to obtain).

### *Keep it simple*

Your initial course should be one which does not require elaborate hands-on training or placement in industry. More sophisticated courses with practical components can be added as your initial entry into open learning proves to be a useful approach to meeting needs. It is important that your first course be seen to be successful by more conservative colleagues who probably believe that open learning, while appropriate for academic subjects, has no place in TVET programmes. An important objective is to clearly demonstrate that, although not a replacement for traditional methods, open learning can significantly enhance access to TVET programmes and allow better use of the scarce resources represented by the traditional facility.

### *Select a team*

One person alone cannot create the momentum required to initiate an open learning programme. A tried and true approach is to select a small team of three or four people, without fanfare, to develop the idea and plan for the introduction of the first open learning course. This task force is often called a "skunk works" and it operates outside the normal structure of the institution, with a clearly defined mandate (see following). It will spend some time understanding what open learning is and is not, and then will

proceed to develop a plan to implement a programme. Selection of the team is critical. Three people may be all that is required: perhaps a senior administrator to ensure institutional support, an instructor to ensure content and method appropriate to the subject and the registrar to ensure the student administrative systems are not a problem at implementation time.

The team must know what is expected of it. The mandate might be to develop a pilot project to determine the efficacy of open learning systems in assisting the institution to meet its mandate. Specifically it might include:

- Selecting a course to be delivered using ODL.
- Selecting suitable content that is available in an open learning format from another institution. (If original development is determined to be the best route, then additional instructional design and content resources that will be required must be determined.)
- Determining the degree of adaptation that will be required to deliver acquired content in the local context.
- Determining the structure of the delivery system and the student support services that will be available.
- Determining how the support services might be implemented within current structure and practice.
- Determining the extent and nature of any training that might be required for the staff who will be involved in the initial delivery of an open learning programme.
- Managing the delivery of the initial pilot ODL programme and establishing a neutral evaluation process.
- Designing a feedback mechanism for the first offering to ensure constant monitoring of the systems and their adequacy and efficacy.
- Developing an implementation plan to address issues such as time lines, staffing requirements, student recruitment and articulation issues.
- Developing a budget for the course development or adaptation and the initial offering.
- Defining the critical success factors, around which to build evaluation plans.
- Developing plans for both formative and summative evaluations.

The team must be given the resources and support to do the job. They need to know what that level of commitment is before they begin to work on the project. Most importantly, a senior administrator must indicate support and act as the champion for the project to give it the prominence required. This administrator will also reinforce for the team the importance of its task in assisting the institution to develop new ways to better meet its mandate.

## Recruit students

Once a plan is in place with necessary approvals and a budget, it is time to offer the open learning programme. Student recruitment is critical to the success of the programme. If the programme to be offered has been carefully selected, there should be a pool of potential applicants to ensure it is oversubscribed. Selection of this cohort is very important. Where possible, steps should be taken to admit students with a good chance of success. It will be very important that the programme be seen as a success,

both in terms of the completion rate and the comments of the participants. Success at this stage will allow an open learning programme to grow. If your initial foray is not seen to be successful, it may be difficult to try to introduce open learning systems in the future.

## *Deliver and evaluate the program*

With students recruited and the resources in place, the final step is to deliver the program to your client group. For this initial offering, a feedback loop from the students into the administrator responsible will be important to allow for any modifications to the delivery services that may be required.

Implement your evaluation process to allow adjustments as the programme operates. Determine what changes would be appropriate in subsequent open learning programmes. An effective evaluation will also be of great value in promoting the efficacy of open learning programmes to stakeholders.