

Openness and Quality in Asian Distance Education

Supported by the International Development Research Centre of Canada

Final Technical Report

March 2013



Except where otherwise noted the contents of this report is licensed under the latest version of Creative Commons Attribution

IDRC Grant No: 104917-001

IDRC Project Title: Openness and Quality in Asian Distance Education

Countries: Cambodia, India, Indonesia, Japan, Mongolia, Malaysia, Philippines

Full Name of Research Institution: Virtual University of Pakistan

Address of Research Institution: Lahore, Pakistan

Email Address: naveed.malik@vu.edu.pk

Telephone Numbers: +924299203901; +924299200604 (telefax)

Names of Researchers/Members of Research Team:

1. Professor Naveed Malik, Virtual University of Pakistan (Project Coordinator)
2. Professor Gajaraj Dhanarajan, Wawasan Open University, Malaysia (Project Implementation Manager & Project Leader, Sub-project 7)
3. Professor Tian Belawati, Universitas Terbuka, Indonesia (Member, Project Board & Co-investigator, Sub-project 6)
4. Professor Insung Jung, International Christian University, Japan (Member, Project Board & Project Leader, Sub-project 6)
5. Associate Professor Patricia B. Arinto, University of the Philippines Open University (Sub-projects Implementation Manager)
6. Mr. Pin Vannaro, Chea Sim University of Kamchai Mear, Cambodia (Project Leader, Sub-project 1)
7. Mr. Pin Tara, Chea Sim University of Kamchai Mear, Cambodia (Project Coordinator, Sub-project 1)
8. Mr. Doung Vuth, Ministry of Education, Youth and Sports, Cambodia (Project Leader, Sub-project 3)
9. Dr. D. Davaalkham, Health Sciences University of Mongolia (Project Leader, Sub-project 4)
10. Associate Professor Sheila Bonito, University of the Philippines Open University (Project Leader, Sub-project 5)
11. Professor Chen Li, Beijing Normal University, China (Co-investigator, Sub-project 6)
12. Professor S. Baigaltugs, Mongolia University of Science and Technology (Co-investigator, Sub-project 6)
13. Professor Wong Tat Meng, Wawasan Open University, Malaysia (Co-investigator, Sub-project 6)
14. Associate Professor V. Bharathi Harishankar, University of Madras, India (Project Leader, Sub-project 7b)

Table of Contents

1. Executive Summary	4
2. Research Problem and Rationale	6
3. Objectives	9
4. Methodology	10
5. Project Activities	17
6. Project Outputs	19
7. Project Outcomes	32
8. Conclusion and Recommendations	35
9. References	37

Annexes

Annex 1. Sub-project 1 Final Report
Annex 2. Sub-project 3 Final Report
Annex 3. Sub-project 4 Final Report
Annex 4. Sub-project 5 Final Report
Annex 5. Sub-project 6 Final Report
Annex 6. Sub-project 7 Final Report
Annex 7. Sub-project 7b Final Report

1. Executive Summary

The Openness and Quality in Asian Distance Education (O&QA) project examined appropriate and innovative use of ICT in formal, non-formal, and informal distance education (DE) in Asia as part of an agenda to promote openness and quality in education and training particularly for the rural and marginalized segments of Asian populations and thus contribute to socio-economic development in the region. It was underpinned by two research questions, as follows:

- 1) To what extent is DE using the new ICTs a viable solution to expanding openness and access to lifelong education opportunities to remote and marginalized communities in Asia?
- 2) How best can the new technologies and arrangements such as OER be applied to design, develop, and share curriculum, technology applications, and assessment and evaluation methods to assure quality both for formal and non-formal learning, within manageable costs?

To address these questions, six country-specific sub-projects in four countries (Cambodia, India, Mongolia, the Philippines) and two region-wide studies on quality assurance (QA) in DE and use and production of open educational resources (OER) in Asia were undertaken.

The country-specific studies employed a design-based research methodology consisting of iterative analysis, design, development, implementation, and evaluation. The DE programs that were developed and implemented included: a training program for farmers in Cambodia using multimedia courseware and mobile phones (Sub-project 1); a lower secondary school (Grade 7) program for out-of-school youth in a fishing village in Cambodia using multimedia courseware and guided group study (Sub-project 3); a training course using text-based DE materials and SMS for rural nurses in Mongolia (Sub-project 4); television programs on non-communication diseases using still pictures and animation and SMS for rural citizens in two provinces in Mongolia (Sub-project 4); and a graduate-level clinical nursing practicum using interactive multimedia software (Sub-project 5). In Sub-project 7b, which was undertaken as a case study for the regional study on OER, reusable learning objects (RLOs) in soft skills were developed and tested for use in undergraduate programs in one university in India.

The region-wide sub-projects employed surveys, interviews and focus group discussions, and case studies. Sub-project 6 investigated the QA practices and standards applied in different countries and DE institutions in Asia, and formulated a set of QA standards and quality key performance indicators (Q-KPIs) for DE in formal and non-formal settings in Asia. Sub-project 7 examined OER-related practices and perspectives in higher education institutions in nine Asian jurisdictions (i.e., China, Hong Kong, India, Indonesia, Japan, Malaysia, the Philippines, South Korea, and Vietnam).

The research findings from the country-specific sub-projects provide empirical evidence of the relative effectiveness of DE as a means of developing knowledge, skills, and attitudes among learners in various contexts, including rural and remote communities. Learner performance in course exams and assignments indicated no significant difference in the learning achievement of participants and non-participants in the DE programs tested. Moreover, post-course interviews and surveys found high levels of learner satisfaction with the new way of learning that they had experienced. While impact on learner behaviour outside of the programs was not observed directly, responses to post-intervention

questionnaires suggest that the learners are applying or intend to apply what they have learned in their practice.

The results of the country-specific sub-projects likewise underscore that the effectiveness of an open and distance learning (ODL) program depends not on any one medium or technology and/or a single approach but on a combination of media and approaches that takes learner needs and capacities and the learning context as a whole into account. The ‘older’ or more traditional text-based and television-based approaches to DE remain relevant especially for broadening access to education in rural and remote communities. As access to interactive multimedia, the Internet, and mobile technologies in these communities improves, optimum combinations of old and new media and DE approaches that can result in effective learning may be explored. Similarly, there is a variety of teaching and learning strategies to choose from, including independent study, group study with a learning facilitator, experiential and authentic learning, as well as combinations of these and their variants, depending on learner characteristics, pedagogical priorities, and the learning environment.

Taken together, the country-specific sub-projects provide an affirmative response to the question of *whether* ICT-supported DE can expand the reach of educational programs to include marginalized individuals and communities. In this sense, they provide a partial answer to the first research question regarding the *extent* to which ICT-supported DE is a viable solution to lack of access to education. Given a starting point of zero experience with ODL in general (e.g., in Cambodia) or with specific ODL applications (e.g., virtual clinical nursing practicum, SMS-based assessment of learning), this is perhaps not surprising. The sub-project reports point to the developmental work that is required before sufficient attention can be given to systematically measuring program or course effectiveness and efficiency, as well as scalability and sustainability. It is therefore recommended that this systematic measurement, using both qualitative and quantitative methodologies, be the focus of future research. For this future work, the country-specific sub-projects provide a useful baseline for both ODL program development and evaluation.

The research findings from Sub-projects 6 and 7 indicate, respectively, that QA in DE in many lower middle and middle income Asian countries is still at an early stage of development, and OER-related practice in higher education institutions in Asia is still largely emergent. Sub-project 6 developed a three-part model for ‘QA Model for DE in Asia’ that includes a policy framework to systemically integrate and align the teaching-learning, administrative, and social functions of DE in an Asian context, with special emphasis on learners’ views of the quality of DE, 50 QA standards and 70 Q-KPIs, and QA procedures. The QA model can be used by a country or DE institution as a basis for adapting QA in DE to its own unique context and seeking quality DE provision and social recognition. Sub-project 7 identified the challenges that need to be addressed in order for the potential of OER for broadening access to cost-effective higher education to be realized: developing awareness and appreciation of the value of digital resources and OER in higher education; practitioner development in teaching and learning with OER; and instituting policies and support mechanisms for creating, sharing, and using OER.

With regard to the second research question, Sub-projects 6 and 7 provide suggestions regarding how the new practices of open education, in particular content sharing and quality enhancement, might be promoted in Asia. A key lesson is that the process of change (of frameworks and methodologies) is multidimensional and evolutionary, involving:

- new conceptions of quality, in particular a shift in focus from content to pedagogy, arising from the sharing, use, and reuse/repurposing of content;
- a quality culture approach that is participatory, development-oriented, value-based, and culturally-sensitive; and
- a holistic and integrated approach to ODL.

In addition to the research findings, the outcomes of the O&QA project include the integration of ICTs in non-formal programs in farming and health education, and formal courses at the basic education level (lower secondary) and tertiary (undergraduate and graduate) education level for delivery by DE mode, which resulted in development of new knowledge and skills for individuals and communities, including many with limited or no access to formal education and training. A good number of those whose knowledge and skills were enhanced by their participation in the sub-projects were female. The country-specific sub-projects also developed among their team members knowledge and skills in DE program design, development, and administration; DE materials design and development; and project monitoring and evaluation. In the area of policy influence, various workshops and symposia were conducted that sensitized academic leaders and education policymakers in the participating institutions and countries in Asia to the value of DE in lifelong learning and human resource development, and the need for policy development in QA in DE and e-learning and OER creation and utilization in order to realize the goal of education and development for all in Asia.

2. Research Problem and Rationale

The capacity to provide lifelong education and training for all segments of society, especially the less skilled and low-income groups, is a key factor in advancing Asian nations to higher levels of economic and social development. However, conventional face-to-face education systems in many low- and middle-income Asian nations cannot provide education for all. The reasons are demographic (massive Asian populations), economic (unaffordable cost of infrastructure and teacher/teaching resources), social (such as gender-based and cultural exclusion), and geographic (remote communities that are great distances away from capital cities). Thus, despite significant gains since the launch of the Education For All (EFA) and Millennium Development Goals (MDG) movement, the number of people without access to formal education in Asia, especially in rural communities where over 60 percent of Asia's 4.0 billion people reside, remains high.

Acknowledging that lifelong education, social inclusion, and economic growth are inseparable, the International Labor Organization (ILO, 2003) underscores four approaches to lifelong learning and training in Asia:

- Initiatives expanding access to lifelong learning opportunities to all groups of people, with special attention to the poor, women, young workers, the low skilled, the long-term unemployed, older workers, and people with disadvantages;
- Initiatives utilizing information and communications technology (ICT) and distance education (DE) to revolutionize lifelong learning especially in non-formal and community education settings;
- Initiatives developing innovative partnerships among similar industries, public and private sectors, and educational institutions to provide up-to-date, attractive, and cost-efficient lifelong learning and training; and

- Initiatives using the workplace as source for lifelong learning opportunities since workplace learning can enhance an organization's productivity and performance while also benefiting the professional and personal development of its members.

Indeed, DE and the new ICTs can be an important means for Asian countries to broaden access to education and lifelong learning. Over the last four decades, DE has been gradually moving towards the centre stage of educational provision globally, particularly in the higher education sector and, to some extent, primary and secondary education. Education innovators have also been testing the use of DE in non-formal and continuing education, including health and agricultural extension, the education of women and girls, teacher training, and the training of other professionals. Various technologies, including older technologies such as radio and television, as well as new ICTs such as computers and the Internet, have been applied in these DE programs. The range of experiences and research results confirm that DE in the context of lifelong education has the capacity to —

- reach out to marginalized and socially excluded groups such as girls, women, out-of-school youth, adults in need of a second chance to acquire formal education qualifications, and the elderly;
- reach out to remote villages, nomadic tribes, and communities in mountainous and sparsely populated areas and isolated islands;
- be learner-centred by allowing learners to choose the pace, time, and method of learning, as well as the content and resources to learn from, according to their circumstances;
- be current with content, providing access to recent and primary sources of information and knowledge;
- facilitate interaction among learners and between learners and mentors, as well as between learners and content; and
- be cost effective through economies of scale.

However, despite the benefits from DE, there remain considerable concerns and challenges. There are concerns about educational quality and effectiveness, and the efficiencies of using technologies for lifelong learning and training. The use of new ICTs in DE requires robust frameworks for quality assurance in diverse contexts, including non-formal and informal DE. (Non-formal DE refers to any organized DE activity or process outside the established formal DE system, whereas informal DE refers to the lifelong activity or process whereby people acquire knowledge, skills, attitudes and values from the educative influences of resources and media, including books, broadcasts, and the Internet.) In addition, there are concerns about democratizing access to education, reducing the cost to the user, availability of hardware and software support, and improving the capacity of institutions to implement new modes of teaching and educational management. Furthermore, as new technologies keep emerging, educational innovators will need to test them in the perpetual quest to make quality lifelong education available for all.

In Asia, there has been tremendous growth in DE provision in recent years. With over 56 percent of the global population, Asia has more than 70 universities that are engaged in providing open access to education, 7 out of 11 of the world's mega universities¹ serving about six million active students, a large and growing number of dual-mode providers (providing both face-to-face and distance education), the world's largest open schooling

¹ Defined as universities with over 100,000 students.

system for remote and socially disadvantaged youth, and an increasing number of cross-border or transnational education programs. Moreover, the development of DE in Asia has been strengthened through networks, professional associations and intergovernmental organizations such as the Asian Association of Open Universities (AAOU), the South East Asian Ministers of Education Organization - Regional Open Learning Centre (SEAMOLEC) that operates for the benefit of Southeast Asian countries, and the South Asian Association for Regional Cooperation (SAARC) Consortium on Open and Distance Learning (SACODiL).

Still, DE praxis in Asia is confronted with challenges relating to policy, technology, access, and quality. For instance, while the Internet is becoming increasingly accessible, there are bandwidth and other connectivity-related issues in many parts of South and Southeast Asia. Instructional design and pedagogic quality are a challenge for many DE providers, while administrative efficiency and technology reliability pose difficulties for other DE providers. Also meriting attention is the issue of illiterate populations, especially girls and women. There are 560 million adult illiterates in Asia accounting for more than 70% of the world's illiterates, and nearly 66% of them are reported to be girls and women.

The foregoing suggests that while DE has found a niche in the educational systems of many Asian nations, much remains to be done in terms of harnessing DE to help these nations achieve MDG and EFA targets. Accordingly, the PANDora (Pan Asia Networking Distance and Open Resource Access – <http://www.pandora-asia.org>) network was organized in 2005 to look into the necessary conditions at the level of policy and practice for the development, implementation, and management of effective and sustainable DE programs using new learning technologies. From 2005 to 2008, eight sub-projects were carried out covering a wide range of research topics encompassing policy, pedagogy, and technology. The key research findings were as follows:

- Lack of access to institutional infrastructure has marginalized many remote communities by depriving them of access to lifelong learning.
- Emerging and newer technologies, such as wireless communication and personal handheld devices, are beginning to provide some solutions towards addressing these barriers.
- New instructional and informational arrangements such as the WikiEducator, the granularization of course content as reusable learning objects, and the Open Educational Resources (OER) movement present opportunities to overcome these barriers.
- The quality of DE programs and services has become more critical than ever with the emergence of e-learning and commercialism in DE.

The current project, called Openness and Quality in Asian Distance Education (O&QA), used the network approach used in PANDora to investigate further how DE methodologies might be applied to improve access to lifelong learning and education especially among marginalized communities, to address human development goals. The following research questions underpinned the O&QA project:

- 1) To what extent is DE using the new ICTs a viable solution to expanding openness and access to lifelong education opportunities to remote and marginalized communities in Asia?

- 2) How best can the new technologies and arrangements such as OER be applied to design, develop, and share curriculum, technology applications, and assessment and evaluation methods to assure quality both for formal and non-formal learning, within manageable costs?

Until recently, much of DE in formal, non-formal, and informal settings has been text-based, with the occasional complementary and illustrative use of multimedia. There has been relatively little use of the interactive capacities of the Internet and the opportunities for collaborative learning that it enables. Likewise, applications of m-learning and learner-centred authentic learning have not been widely explored. However, there is evidence from studies in high-income countries in Asia and beyond that DE programs using the new ICTs result in higher learner satisfaction, greater learner participation, and better learning achievement. It is necessary to confirm whether these perceived benefits from DE programs using the new ICTs can also be achieved among learners from low-income groups and marginalized populations. Aside from the concern for equity of access to the new technologies — i.e., the need to address the digital divide that threatens to further exclude those who are economically and socially disadvantaged — this proposition is informed by empirical evidence that poor and rural communities can adopt and adapt new ICTs for a variety of purposes (e.g., use of mobile phones by rural women in Bangladesh), provided the technologies are appropriate and easy to manage. In addressing the first research question, the O&QA project aims to strengthen our understanding of how different DE technologies and approaches can be deployed effectively in formal, non-formal, and informal learning programs for different groups of learners in unserved and underserved communities in Asia.

The second research question addresses the concern for quality in the provision of education and lifelong learning at a distance. The use of new technologies challenges existing quality assurance (QA) frameworks for DE. At the same time, these new technologies are enabling new ways of addressing concerns for the quality as well as the cost-effectiveness, scalability, and sustainability of DE. Of particular interest to the O&QA project is the phenomenon of OER and its potential for improving the quality of teaching and learning in a cost-effective and highly scalable and sustainable manner. OER are digitized educational materials and resources offered openly for anyone to repurpose, remix, revise, and redistribute. It is important to examine OER-related practice in Asia and its potential for improving both the openness and quality of DE in the region.

3. Objectives

The O&QA project has sought to examine appropriate and innovative use of ICT in formal, non-formal, and informal DE in lifelong education settings in Asia as part of an agenda to promote openness and quality in education and training particularly for the rural and marginalized segments of Asian populations and thus contribute to socio-economic development in the region.

The specific objectives of the project are to —

- 1) Develop a common framework across the region and across disciplines (in particular nursing, agricultural extension, health, vocational and teacher education) to reflect the optimum intersection between access, pedagogy, and ICTs for rural and marginalized communities in skills training and lifelong learning;

- 2) Identify the impact on adult learning of employing different pedagogical approaches through a number of ICT-supported DE programs to increase the awareness of policymakers in the region about the value of appropriate technology support to improve lifelong learning and training effectiveness;
- 3) Examine participants' reactions, knowledge and skills acquisition, application, and organizational and/or social outcomes of different ICT-supported DE technologies and services to improve policy guidelines at program, institution, and government levels;
- 4) Identify quality assurance (QA) practices and standards in use in the region and develop a set of common QA standards and quality key performance indicators at course, institution, and national levels, for ICT-supported DE in formal, non-formal, and informal lifelong education settings in Asia that will facilitate the development of policy guidelines; and
- 5) Establish, quantitatively and qualitatively, the extent of practice and concerns in using sharable OER by institutions and individuals in Asia, and explore strategies to develop, adapt, localize, and share OER for lifelong education in Asia.

Section 4 describes the approaches and strategies implemented to address these objectives.

4. Methodology

To achieve the research objectives, eight sub-projects were planned (Table 1):

Table 1. Overview of sub-projects and their relation to research objectives

Sub-project Number and Title	Target Group	Technologies	Subject Area	Research Objectives Addressed				
				1	2	3	4	5
1 - The effectiveness of distance learning approach to non-formal distance learning for farmers in Kamchai Mear District, Prey Veng Province, Cambodia	Farmers in rural Cambodia	Mobile technology (SMS & voice) and interactive multimedia	Agricultural information and skills					
2 - Analysis, development and evaluation of Internet & FM radio technology-integrated distance farmer training in Tibet	Farmers in rural Tibet	Internet and digital radio	Agricultural skills					
3 - A lower secondary education program by distance learning mode for the youth of Angkoul Village, Krong Kep District, Cambodia	Out-of-school youth in Cambodia	Interactive multimedia courseware (text, video and audio combined)	10 subjects comprising the Grade 7 curriculum					

Sub-project Number and Title	Target Group	Technologies	Subject Area	Research Objectives Addressed				
				1	2	3	4	5
4 - Distance education for emerging health issues in nomadic Mongolia	Nurses and rural communities in nomadic Mongolia	SMS, still pictures and animation	Emerging health issues					
5 - Development and evaluation of use of distance education technologies in enriching the theoretical aspect and clinical practicum in nursing: Nepal and the Philippines	Nurses in rural Nepal and the Philippines	Multimedia and asynchronous and synchronous technologies	Clinical nursing practicum					
6 - Quality assurance models, standards, and key performance indicators for ICT-supported distance education in Asia	Formal, non-formal & informal DE institutions / programs across Asia	A variety of ICTs	Across all subject areas					
7 - A study of the current state of play in the use of open educational resources in the Asian region	Institutions and individuals in Asia using/developing OER	Digitized OER	Across all subject areas					
7b - Evaluation of the effectiveness of RLO-based OER in enhancing the soft skills of students	Engineering students in an Indian university	Reusable learning objects (RLOs)	Soft skills					

Sub-project 2 did not push through because the necessary government clearances could not be secured in time. In addition, the Nepal component of Sub-project 5 was terminated after two quarters due to a dispute between the principal investigator and the project's financial manager, which impeded project activities and which resulted in a loss of confidence on the part of the Project Board in the research team's ability to undertake the project.

In all of the sub-projects implemented, both qualitative and quantitative research approaches and various research strategies — surveys, case studies, design-based research, pre- and post-tests, and comparative analyses — were employed to address various issues. These are described in sub-sections 4.1 and 4.2 below.

4.1 Country-specific studies

Sub-projects 1, 3, 4, and 5 were country-specific studies (i.e., they were implemented in a single country context) applying various blends of DE technologies and approaches in a range of formal, non-formal, and informal contexts, including lower secondary education, higher education, agricultural extension training, continuing professional development for health care professionals, vocational education, and community education.

In accordance with the first specific objective of the O&QA study as a whole — namely, to develop a common framework across the region and across disciplines to reflect the optimum intersection between access, pedagogy, and ICTs in skills training and lifelong learning programs especially for rural and marginalized communities — these country-specific studies employed a design-based research methodology. Design-based research is “a systematic but flexible methodology... to improve educational practices through iterative analysis, design, development, and implementation, based on collaboration among researchers and practitioners in real-world settings, and leading to contextually-sensitive design principles and theories” (Wang & Hannafin, 2005, p. 6). It consists of four phases, as follows:

Phase 1: Analysis of Learners and the Learning Context

Phase 2: Program Design and Development

Phase 3: Program Implementation

Phase 4: Program Evaluation

In the first phase, a survey of the target learners was undertaken in each of the country-specific sub-projects to draw up a profile of learners, including their learning needs, prior knowledge of the topics to be covered, media preferences, learning styles, and other learner characteristics that would serve as input in the design of the DE program to be implemented. An analysis of the learning environment within which the DE programs were to be implemented was also undertaken.

In the second phase, the DE technologies and strategies to be tested were planned and the DE materials to be deployed were developed. Table 2 shows the DE technologies that were planned for each sub-project.

Table 2. DE technologies in the country-specific sub-projects

Sub-project	DE technologies to be tested
1	Multimedia courseware; SMS and MMS via mobile phones
3	Multimedia courseware; learning centre-based tutoring
4	Print-based DE materials; SMS via mobile phones
	Television programs using animation and still pictures; SMS via mobile phones
5	Interactive multimedia courseware

The third phase involved the participation of the target learners and teams of instructors/teachers and learning facilitators. In sub-projects 3 and 5, one DE program each was implemented with one set of learners. In sub-project 1, two DE programs were implemented: one using the multimedia courseware without learner support via SMS and the other using the multimedia courseware with learner support via SMS. In addition, a face-to-face farmer training program on the same topics covered in the DE programs was implemented to provide a comparison group to the two DE programs. In sub-project 4, three DE programs were implemented for the vaccinator nurses: one using the conventional print-based learning material without learner support, the second using self-instructional print-based learning material (i.e., with self-assessment questions) but without learner support, and the third using the same self-instructional print-based learning material with learner support via SMS. Also in sub-project 4 two DE programs were implemented for the rural communities: one with television programs using animation and with learner support via

SMS, and another with television programs using still pictures and with learner support via SMS.

Finally, in the fourth phase, the learning outcomes from each DE program was measured quantitatively and qualitatively. Specifically, and following the well known training evaluation approach proposed by Kirkpatrick (1975; 1994) and refined and expanded by Kaufman, Keller & Watkins (1995), the following sets of outcomes were measured:

- learner reactions (learner satisfaction)
- knowledge and skills acquired (learning achievement)
- changes in behaviour or practice on the job (transfer)
- organizational benefits (e.g., changes in management styles, cost benefits)
- social outcomes (e.g., bridging gender divide, policy influence)

In all of the sub-projects, assessment scores were collected and analyzed, and post-intervention surveys were undertaken. In sub-projects 1 and 4, the assessment scores of different learner groups were compared. In sub-project 5, a comparison was made between the assignment scores and final grades of the study participants and those of a historical cohort.

The evaluation phase of the country-specific sub-projects addressed the second and third specific objectives of the O&QA project as a whole, namely, to identify the impact on adult learning of employing different pedagogical approaches through a number of ICT-supported DE programs; and to examine participants' reactions, knowledge/skills acquisition, application, organizational benefits, and social outcomes of different ICT-supported DE approaches and technologies to improve policy guidelines at program, institution, and government levels. Findings from the evaluations are reported under section 6.

4.2 Regional research

Sub-projects 6 and 7 were regional in scope and involved the collaboration of DE institutions and experts across Asia.

Sub-project 6 investigated the QA practices and standards applied in different countries and DE institutions in Asia, and formulated a set of QA standards and quality key performance indicators (Q-KPIs) for DE in formal and non-formal settings in Asia. This sub-project, which employed several research strategies in four stages of research, directly addressed the fourth specific objective of the O&QA project. At the analysis stage of Sub-project 6, previous studies on QA as well as documents and websites of national, regional, and international QA agencies and DE institutions were analyzed, and two surveys of QA criteria, mechanisms, and processes were conducted — a survey of DE providers in Asia, and a survey of DE learners. Case studies of QA practices in DE programs in Asia were also carried out, as well as interviews with DE and e-learning experts and policymakers from national agencies. In the design and development stage, a QA model suitable for learners in DE programs in Asia and a set of essential QA standards and Q-KPIs that can be adopted by Asian DE providers to safeguard accountability, productivity, and efficiency in DE were formulated. These were presented for review by QA experts and policymakers at workshops held during the evaluation stage. In addition, a validation survey was conducted to validate and finalize the QA standards and Q-KPIs.

Sub-project 7 addressed the fifth specific objective of the O&QA project through a survey of OER utilization and production in higher education institutions in nine Asian jurisdictions (i.e., China, Hong Kong, India, Indonesia, Japan, Malaysia, the Philippines, South Korea, and Vietnam), and case studies of OER-related projects in the region. The survey was administered online and by mail in English, Bahasa Indonesia, Chinese, Japanese, Korean, and Vietnamese to individual academics and administrators of tertiary education institutions. The survey asked respondents to provide information on their use of digital resources, including types and sources of digital resources; motivations and barriers in the utilization and creation of OER; knowledge of copyright; and institutional policies and support for OER utilization and production. Academic administrators were requested to answer the survey as representatives of their institutions, and their responses were compared with those of individual academics. To complement findings from the survey, case studies of OER development in a cross-section of Asian institutions and organizations were conducted. In addition, discussions with policymakers, faculty administrators, and academic staff were undertaken at induction sessions, seminars, and workshops.

One of the specific objectives of Sub-project 7 was an economic analysis of OER development and use. This was done through Sub-project 7b, which focused on the design and development of reusable learning objects (RLOs) for enhancing soft skills. While Sub-project 7 surveyed the macro level issues pertaining to OER in Asia, Sub-project 7b provided a micro level experiential narrative of the design, creation, use, and reuse of OER in a conventional dual mode university in India, the University of Madras. This sub-project developed a suite of RLOs in the form of text files/word documents, pictures with annotations, audio files, and video files addressing the development of language skills, non-verbal communication skills, personality skills, interpersonal interaction skills, and leadership. The RLOs were then integrated into an open source learning management system and tested among learners, teachers, and academic administrators in three sites. During the testing phase users were requested to complete a questionnaire. In addition, an assessment of the cost benefits of producing RLOs was undertaken, and qualitative data from those involved in developing the RLOs were collected and analyzed.

Figure 1 shows how the sub-projects relate to the research questions and the specific objectives that underpinned the project.

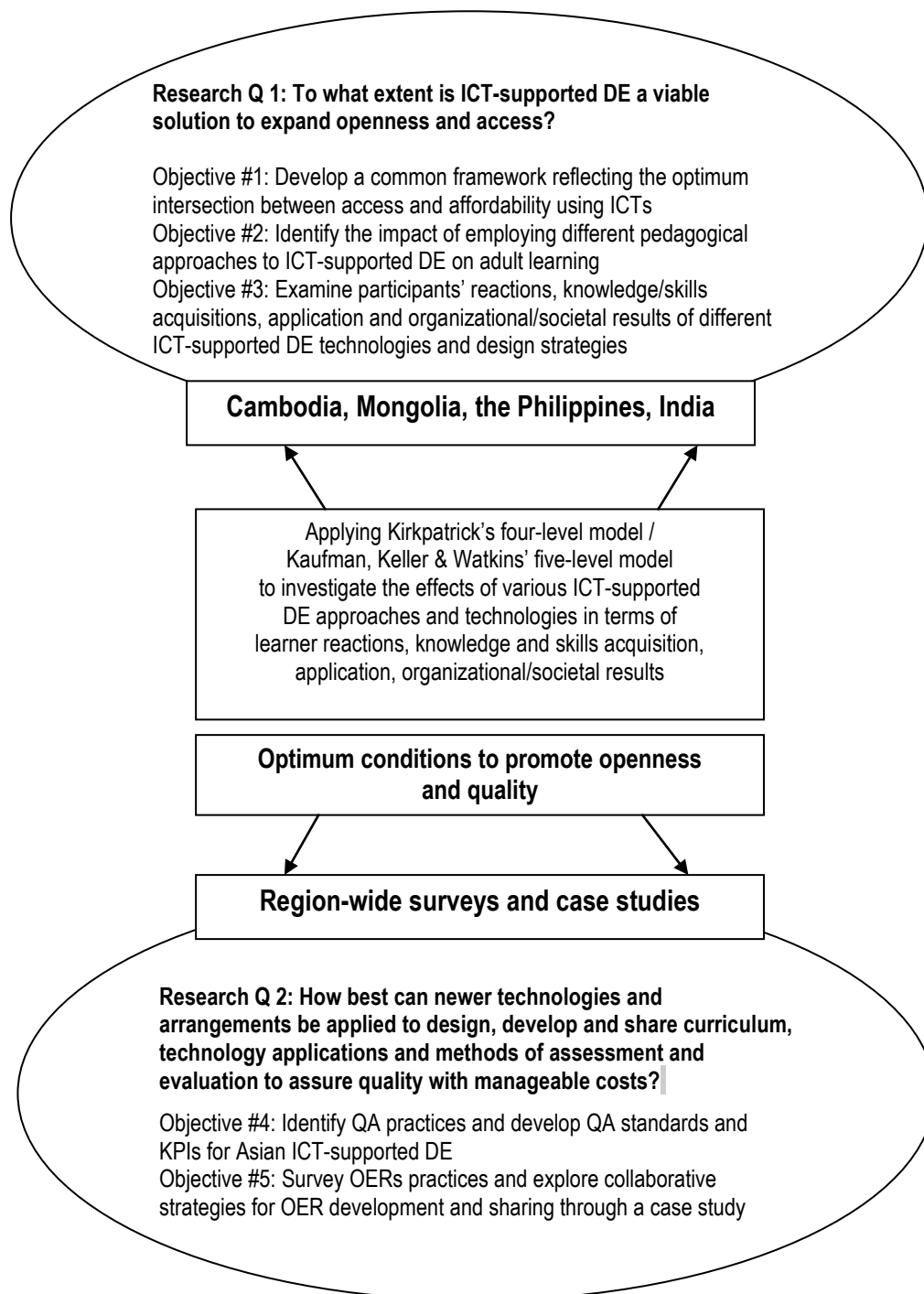


Figure 1. The research framework

4.3 A collaborative networking model

To ensure effective and efficient coordination of the sub-projects for the achievement of project objectives, the collaborative networking model of PANdora was continued by which research activities and findings would be shared among the stakeholders of the seven sub-projects and among participants within each sub-project. Specifically, a network website was planned for construction through which sub-project teams could share research experiences and skills to assure the reliability and validity of research findings; share specific tools and/or resources such as OER; and participate in video, audio, or web conferences to compare research progress and lessons learned. In addition, an Project Board provided professional consultation in a flexible and open way to ensure quality and timely completion of each sub-project's research outcomes. The Project Board was tasked with providing guidance regarding literature on DE technologies, best practices and other related areas; direct advice or instruction on research design and methods; new ideas in DE systems design and data analysis; and on-demand help, feedback, and approval.

However, although there was initial work done on the construction of a new network website, the website has not been completed and the project instead utilized Basecamp, a web-based project management and collaboration tool, for sharing reports and other files, messages, and schedules and milestones. Furthermore, while the sharing and discussion of research experiences across the sub-projects had been envisioned to take place online for the most part, in fact this took place in face-to-face meetings and workshops, as well as occasional Skype calls, during the first two years of the project. Specifically, sub-project team leaders shared insights from initial project activities and their envisioned research outcomes at a workshop on outcome mapping, gender analysis, and communication for social change held in July 2010, and a second workshop on outcome mapping held in September 2011. In the case of the two sub-projects in Cambodia (Sub-projects 1 and 3), a workshop on DE program development held in June 2010 provided an opportunity for the two sub-project teams to interact. In addition, the project leader of Sub-project 5 served as a resource person at workshops on DE program delivery for Sub-projects 1 and 3 that were held in Cambodia in February 2011. Within each of the sub-projects, various project team meetings and workshops were held.

The Project Board provided guidance on each sub-project's research design during the project conceptualization phase (from May to December 2009) and at the workshop on outcome mapping that was held in July 2010. Moreover, as planned, most of the guidance for sub-project teams during project implementation was provided by the Project Implementation Manager through field visits and via email. The Sub-Projects Implementation Manager also conducted the training workshops on DE program development and delivery for the two sub-project teams in Cambodia, aside from providing guidance via email.

In addition, the progress of each sub-project was monitored through the quarterly technical and financial reports submitted to the Project Implementation Manager and Project Coordinator.

4.4 Integration of gender and social analysis

While the technologies applied to enhance access to lifelong learning, livelihood, and skills training are gender neutral, this is often not the case with the ability to access these technologies. Thus, the sub-project research teams were encouraged to investigate any

gender-related issues, such as gender differences in attitudes to and uses of DE technologies, gender differences in access to technologies, and gender difference in learning outcomes. They were also reminded to take into account environmental and other social dimensions (e.g., language) in their analysis of research outcomes. Findings in this regard are reported in section 6.

5. Project Activities

In addition to the research activities described in section 4, capacity-building workshops and activities aiming to influence policy were conducted under the auspices of the O&QA project as a whole as well as under specific sub-projects. These are presented below.

5.1 Training/Capacity-building workshops and related activities

To improve the capacity of sub-project teams leaders to measure and evaluate impact, two workshops on outcome mapping were held. In addition, training in DE course development and program delivery were provided for Sub-projects 1 and 3.

Table 3. Training workshops conducted

Sub-project	Workshop Name/Topic	Dates and Venue	Participants
1 & 3	DE Course Development	22-24 June 2010, i-REACH Hub, Kep, Cambodia	5 module writers for SP1 2 multimedia specialists for SP1 10 Grade 7 subject teachers for SP3 3 multimedia specialists for SP3 7 instructional designers
all (1-7b)	Outcome Mapping, Gender Analysis, and Communication for Policy Influence	27-30 July 2010, Universitas Terbuka, Indonesia	12 sub-project leaders/principal investigators and sub-project team members Project Board members
1	DE Program Delivery	11-12 February 2011, Pong Toek Lower Secondary School, Kep, Cambodia	School principal and DE program coordinator Representative of Kep Provincial Office of Education 10 Grade 7 subject teachers 1 learning facilitator 1 Angkoul i-REACH hub manager
3	DE Program Delivery	14-15 February 2011, Chea Sim University of Kamchai Mear, Prey Veng Province, Cambodia	5 module writers 2 multimedia designers 3 learning facilitators 1 research coordinator 2 volunteers
1, 4 & 5	Outcome Mapping	28 September 2011, Wawasan Open University, Penang, Malaysia	3 sub-project leaders

5.2 Policy Workshops and Symposia

The O&QA project sought to influence open and distance learning (ODL) policy in Asia through various workshops and symposia, as follows:

Table 4. Policy workshops and symposia held

Sub-project	Workshop Name/Topic	Dates and Venue	Participants
1	Policy Dialogue on Open Distance Learning for Cambodia	28-29 March 2012, Hotel Cambodiana, Phnom Penh, Cambodia	MOEYS officials, members of academe, and education nongovernment organizations in Cambodia
6	Policy Workshop on “Quality Assurance and Enhancement in Distance Education & e-learning in Higher Education”	27-28 December 2010, Seoul, Korea	heads and staff of DE and e-learning tertiary institutions
	Policy Workshop on “Quality Assurance in Distance Education”	28-29 April 2011, Beijing Normal University, China	heads and staff of DE institutions
	Policy Workshop: “Quality Assurance in Asian ODL and E-Learning”	29 September 2011, Wawasan Open University, Penang, Malaysia	heads of open universities and other DE providers in Asia attending the 25th AAOU Annual Conference
	Policy Workshop: “Quality Assurance for Distance Education”	29 February 2012, Siem Reap, Cambodia	APQN members and participants in the APQN 2012 Conference and Annual General Assembly
	Quality Assurance and Gender in Distance Non-formal Education	12-14 June 2012, International Christian University, Tokyo, Japan	9 policymakers and program leaders in non-formal education from Cambodia, Laos, and Mongolia
7	Pre-Conference Panel Presentation and Discussion on Open Educational Resources	21 October 2010, Melia Hanoi Hotel, Hanoi, Vietnam	heads and academic staff of open universities attending the 24th AAOU Annual Conference
	OER for Senior Management	30 September 2011, Wawasan Open University	heads and academic staff of open universities
	A Symposium on Open Educational Resources: “An Asian Perspective on Policy and Practice”	19-21 September 2012, Wawasan Open University, Penang, Malaysia	heads and academic staff of open universities
	Symposium on “E-learning and open educational resources: practices and new initiatives”	18 April 2012, Open University of Hong Kong	school teachers and principals, academic and educational development staff, and heads of university departments
	AAOU Pre-conference Open Seminar: “The Impacts of Open Educational Resources (OER) in Lifelong Learning and Open Education”	15 October 2012, Makuhari Messe, Chiba, Japan	heads and academic staff of open universities attending the 26th AAOU Annual Conference

5.3 Project Management Meetings

Excluding the project inception workshops held between May and December 2009, six Project Board meetings were held throughout the duration of the project on the following dates:

- January 2010, IDRC Office, Singapore
- 27-30 July 2010, Universitas Terbuka, Jakarta, Indonesia
- 26-28 March 2011, IDRC Office, Singapore
- 27 March 2012, Hotel Cambodiana, Phnom Penh, Cambodia
- 22 September 2012, Wawasan Open University, Penang, Malaysia
- 24-25 November 2012, Pullman Hotel, Putrajaya, Malaysia

5.4 Research Synthesis Meeting

A research synthesis meeting where sub-project leaders presented and discussed research findings and project outcomes was held on 16-17 December 2012 at the Sheraton Mustika Resort in Yogyakarta, Indonesia.

6. Project Outputs

This section presents the key research findings from each of the sub-projects (sections 6.1 and 6.2), which form the core of the research outputs, as well as the products of project activities such as research publications (section 6.3) and courseware (section 6.4).

(Note: The full reports of the Sub-projects are attached as Annexes 1-7.)

6.1 Research Findings from the Country-Specific Sub-projects

Each sub-project yielded a set of research findings in connection with the particular research objectives that they sought to address (see the final reports of the sub-projects attached as annexes). These research findings are summarized below.

6.1.1 Sub-project 1: The effectiveness of a distance learning approach to a non-formal distance learning course for farmers in Kamchai Mear District, Prey Veng Province, Cambodia

The objective of this sub-project was to test the effectiveness of a DE mode non-formal course for farmers from three communes in Kamchai Mear District, Prey Veng Province, Cambodia using multimedia courseware for content delivery and mobile phones for learner support and assessment.

Based on assignment and test scores, the study found that differences in the knowledge gained by the farmers participants were not significant among those who went through the DE mode of training using the multimedia courseware and with learner support via mobile phones, those who went through the DE mode of training using the multimedia courseware but without support via mobile phones, and those who went through traditional face-to-face training. Also, based on responses to a post-training survey, there were marginal differences in the adoption of new practices by the three groups.

With regard to the use of mobile phones for learner support, the study found that the farmers using mobile phones preferred to place voice calls to instructors instead of sending a text or multimedia message using SMS (short message service) or MMS (multimedia messaging service). Also, the farmers asked the instructors general questions the answers to which could be found in the modules, instead of asking questions related to seeking solutions to specific problems they encountered upon introducing a change in farming practice. The sub-project team concluded that there is a need for a better orientation of learners to how to use mobile phones for learner support.

6.1.2 Sub-project 3: A lower secondary education program by distance learning mode for the youth of Angkaol Village, Krong Kep District, Cambodia

The objective of this sub-project was to explore teaching and learning strategies for a DE mode lower secondary education program for out-of-school youth in Angkaol, a fishing village in Kep Province, Cambodia. Based on an analysis of the local context and the target learners, 10 subjects comprising the Grade 7 curriculum in Cambodia were taught by DE mode to a group of 20 out-of-school youth in Angkaol. The learners attended bi-weekly sessions at a learning centre for 12 months during which they studied multimedia learning packages in these subjects under the guidance of a learning facilitator. There were occasional visits from subject teachers from Pong Toek Lower Secondary School for monitoring and assessment.

Sixteen of the 20 learners enrolled completed the program with satisfactory examination scores, and they were awarded certificates of completion at a closing ceremony presided over by the Director of the Kep Provincial Office of Education and the Governor of Damnak Chang Eur District. The sub-project team reported that the Pong Teuk Lower Secondary School and Kep Provincial Office of Education are ready to integrate these successful DE students into conventional lower secondary schooling. The four students who did not complete the program include two female students who got married and two who moved to another province.

The sub-project team concluded that the intended sub-project results were achieved. It was noted that as a result of this sub-project, there is interest among students, parents, and local authorities in continuing the DE program to include the next grade level, and the Ministry of Education, Youth and Sport (MOEYS) is developing a DE policy for nationwide implementation. The project was also said to have contributed to capacity-building in DE and use of ICTs for teaching and learning among the teachers, school administrators, and project team members.

6.1.3 Sub-project 4: Distance education for emerging health issues in nomadic Mongolia

The objective of this sub-project was to investigate the effectiveness of DE mode training with SMS-based learner support in the management of hepatitis B vaccine for rural nurses, and television-based education on emerging health issues for rural communities in remote areas of Mongolia.

The key findings from the DE mode training for nurses were that:

- Knowledge of transmission routes of the hepatitis B virus, knowledge that the first dose of the vaccine should be given within 24 hours after birth, and knowledge regarding the

importance of the birth dose to prevent mother-to-child transmission was higher among all groups who went through the DE mode of study compared to participants in a baseline survey.

- Among the three groups that underwent the DE mode of study, the level of knowledge of those who used the DE material and SMS was significantly higher than the levels of knowledge of participants who used the traditional text-based material and those who used the specially prepared DE material.
- The practice of the vaccine quality test was greater among the nurses who went through the DE mode of training (i.e., 75%, 87.4% and 93.3% for the group using the traditional material, the group using the newly developed DE material, and the group using the DE material with SMS, respectively) compared to baseline study participants (i.e., 42.6%).
- The practice of temperature control was greater among the DE training participants than among baseline survey participants (i.e., 62.2% in the baseline survey but 89%, 91.7% and 94.9% for the group using the traditional material, the group using the newly developed DE material, and the group using the DE material with SMS, respectively).

The key findings from the investigation of the effectiveness of television-based DE programs for improving the rural population's knowledge of and attitudes towards prevention of hypertension, diabetes, liver cancer, and cervical and breast cancers were as follows:

- There was a significant improvement in awareness of testing for breast and cervical cancers among study participants in both groups (i.e., those who watched the television programs with animation and those who watched the television programs with still pictures) — for example from less than a fifth (18.1%) and two-fifths (39.4%) of study participants in the baseline survey in Bulgan *aimag* being aware of mammography and self-testing for breast cancer, respectively, to 54.4% and 69.6% of the study participants in Bulgan *aimag* being aware of mammography and self-testing for breast cancer, respectively, after watching the television program.
- There was an improvement in attitudes to testing for breast and cervical cancers among study participants in both groups — for example from 34.1% to 75.8% of the study participants in Bulgan *aimag* undergoing self-testing for breast cancer, and 27.8% to 36.1% of the study participants in Bulgan *aimag* undergoing a pap smear test.
- In three out of four tests given, more participants from Bulgan *aimag* who watched television programs featuring animation answered the test questions correctly compared to participants from Arkhanghai *aimag* who watched television programs featuring still pictures only.

The sub-project team concluded that television programs with animation were more effective in providing health-related information to rural communities than television programmes using still pictures only.

6.1.4 Sub-project 5: Development and evaluation of use of distance education technologies in enriching theoretical aspect and clinical practicum in nursing in the Philippines

The objective of this sub-project was to develop and evaluate the use of multimedia courseware and DE approaches in a clinical practicum in nursing course in the Philippines.

The evaluation showed no significant difference in the learning outcomes derived from using the courseware based on pre-test and post-test scores. Nor was there a significant difference

in the final grades of the study group and the control group (i.e., the historic cohort). However, a qualitative analysis of the students' responses to the value of the courseware to their learning showed an impact on students' cognitive strategies, attitudes, and thinking skills. In terms of cognitive strategies, the use of the courseware helped students integrate the concepts in practice and use critical thinking in making clinical decisions. The courseware also fostered positive attitudes and helped the students appreciate the subject matter better. Thinking skills were reflected in the appreciation of the concepts and their application in real life. Students also found the courseware very useful for the following reasons: (1) it illustrates and provides guidance on what to do during the clinical practicum; (2) it provides information about the scope and processes of the practicum; (3) it details the process of assessing the patient, reviewing laboratory and diagnostic tests, and preparing drug studies; (4) it stimulates critical thinking and decision-making; and (5) it improves interaction with patients. The students were satisfied with the courseware because of the following: (1) the use of real-life case scenarios; (2) complete and rich information about the cases; (3) use of various multimedia formats; and (4) authentic learning activities and resources. They recommended the use of the courseware prior to the actual clinical practicum since it prepares students for the many tasks in the actual clinical setting.

Students were also asked to rate themselves in terms of changes in behaviour related to the conduct of the clinical practicum. Among the 10 competencies listed, the following were given the highest ratings: (a) reviewing the nursing concepts for the clinical practicum such as nursing history, physical examination, diagnostics, nursing process (4.45; ± 0.80); (b) becoming an independent self-paced learner (4.45; ± 0.91); and (c) identifying relevant nursing interventions for different case scenarios (4.23; ± 0.92). The following competencies received the lowest ratings: (a) developing an understanding of the objectives of the clinical practicum (4.00; ± 0.98); and (b) having an orientation to the clinical practicum setting (4.09; ± 0.87).

6.2 Research Findings from the Regional Sub-Projects

6.2.1 Sub-project 6: QA models, standards, and key performance indicators for ICT-supported distance education in Asia

This sub-project aimed to investigate various QA models and standards applied by Asian DE institutions and accreditation agencies, and develop a set of essential QA standards and quality key performance indicators (Q-KPIs) for DE in formal, non-formal, and informal settings in Asia.

Through a survey of DE providers, it was found that QA in DE is still a relatively new concept in some countries/territories, and the different QA approaches that exist reflect differences in cultures, expectations, and stages of development, while also sharing some common features. The latter include: 1) working towards promoting a culture of quality within QA agencies and DE institutions; 2) positioning QA in the pursuit of self-improvement and public accountability of DE institutions; 3) considering distinctive features of DE in QA frameworks or during evaluation processes; 4) linking QA results to direct or indirect funding, levels of autonomy, or other support (in the case publicly funded institutions); 5) adopting both internal and external assessments; and 6) making QA results public. Also, depending on their size and institutional priorities, Asian DE and e-learning institutions vary in terms of having a formal QA policy framework and a formal QA unit or office.

From a review of related studies, 10 dimensions of quality were identified and a QA model consisting of three domains — supportive, pedagogical and environmental — was formulated. The supportive domain refers to an assistive quality aspect that helps learners carry out distance learning effectively and efficiently. It includes three quality dimensions — *Faculty Support*, *Student Support*, and *Information & Publicity*. The pedagogical domain refers to a core quality aspect in DE that helps learners develop their knowledge, skills, and attitudes both independently and collaboratively. It includes four quality dimensions — *Course Development*, *Teaching & Learning*, *Interactive Tasks*, and *Evaluation & Assessment*. The environmental dimension refers to a contextual quality aspect that creates a distance teaching and learning environment where learners work productively and flexibly with high confidence in DE. It includes three quality dimensions — *Infrastructure*, *Internal QA Mechanism*, and *Institutional Credibility*.

A survey of 1,665 DE earners in 12 Asian jurisdictions conducted by the sub-project team confirmed that the proposed conceptual model is appropriate in explaining Asian distance learners' perception of quality in DE. Moreover, the survey showed that unlike male students, female students perceive all quality domains and dimensions as important in evaluating quality in DE. Gender differences were also found in perceived barriers to and support for DE, which suggest that Asian DE providers should adopt gender-considerate learner support strategies.

To document good practices and QA models in Asian DE and introduce a regulatory framework covering QA in higher education in Asian countries and DE/e-learning providers/programs in Asia, 16 cases studies were undertaken.

Finally, following consultations with QA policymakers, researchers, and DE and e-learning teachers and learners, a general 'QA Model for DE in Asia' was proposed. The proposed three-part QA model includes a policy framework to systemically integrate and align the teaching-learning, administrative, and social functions of DE in an Asian context, with special emphasis on learners' views of the quality of DE, 50 QA standards and 70 Q-KPIs, as well as QA procedures. The QA model can be used by a country or DE institution as a basis for adapting QA in DE to its own unique context and seeking quality DE provision and social recognition.

6.2.2 Sub-project 7: A study of the current state of play in the use of OER in the Asian region

This sub-project sought to establish the extent of practice and concerns in using OER by academics and academic institutions in Asia.

From the survey of academics and representatives of academic institutions in nine jurisdictions that was conducted, it was found that despite the global dialogue on OER and the availability of and access to digital resources in most Asian higher education institutions, perceptions of and attitudes toward OER are mixed. Positive attitudes are generated as institutions see opportunities to build collaborative partnerships and build institutional reputations (>70%), and individual academics consider engagements with OER initiatives to gain academic credit, enhance reputation, and develop new courses quickly (>70%). Those who are uncertain about OER cite reasons such as limitations to the freedom to reuse, inability to control the use of their content, loss of benefits, and fears of legal infringement

(between 30% and 60%). The survey results show that there is awareness at least among faculty of the open universities in Asia of a basic definition of OER and, at a surface level, the nature of licenses that permit OER to be used. But detailed knowledge of both national copyright laws and Creative Commons licences is somewhat weak. Less than 40% of those who responded were confident of their knowledge pertaining to copyright laws and less than 30% had used either the Creative Commons or similar licences.

Production of OER was found to be uneven across the countries represented in the survey. Both China and India are prolific producers but do not necessarily use a Creative Commons licence, while the Southeast Asian nations except Vietnam are not active producers, and in the Far East Hong Kong, Japan, and South Korea have been engaged in OER production on a limited scale. Production is done mostly by individuals (> 50%) and not in any collaborative way, and free exchange of content is not widespread (<25%). Where OER is used, content is sourced as free downloads from the Internet (>70%), produced by the user or colleagues in the same institution (>50%), and to a lesser extent, sourced from repositories (~40%). Individuals who are active in OER initiatives seem to be motivated by recognition by peers and other users (>75%). Financial rewards did not feature highly (<40%). Barriers to a greater participation in the production and use of OER varied from lack of awareness (>75%) to lack of skills (>70%) to lack of interest in pedagogical innovation among staff members, and lack of incentives and support from management (>50%).

With regard to policies in support of OER production and use, the survey found that more than two thirds of the institutions surveyed have no policies on licences such as Creative Commons, and they have no policies for encouraging sharing of content and collaboration with peers and others in the production of content. Less than half of the institutions that responded have policies on staff development on OER, and about a third do not provide incentives for staff to engage in OER initiatives.

Sub-project 7 also undertook 11 case studies to explore strategies for developing, adapting, localizing, and sharing OER in Asian countries. Eight of the cases are higher education institutions, one is a non-governmental organization producing open textbooks in Vietnamese, one is the philanthropic arm of a commercial publishing house producing resources on Philippine history and culture, and one is an international agriculture research institute developing free Web-based training materials on climate and agronomy for farmers, extension workers, and academics in India. These institutions produce various types of resources ranging from text and audio to video and interactive multimedia. There are no clear identified targets for these OER provisions: that is, while they are mostly relevant to the higher education community, their use may be extended to members of the public, businesses, and industries. All but three of the initiatives are publicly funded.

Based on the results of the survey, case studies, and group discussions undertaken in this sub-project, the researchers concluded that it is still too early to predict the trajectory that OER developments can take in most parts of Asia. Aside from awareness-raising, capacity building, and financial support, key factors identified by the sub-project team include infrastructure and policy development. Advocacy by academics, policymakers, and legal experts is also deemed essential.

6.2.3 Sub-project 7b: Evaluation of the effectiveness of RLO-based OER in enhancing the soft skills of students

The aim of this sub-project was to investigate the effectiveness and cost benefits of RLO-based OER in enhancing students' soft skills at the University of Madras. The RLOs developed were tested in three sites in Chennai and one site outside Chennai. The effectiveness of the RLOs was evaluated by learners, teachers, and academic administrators.

The learner evaluation showed that all of the learners found the RLOs useful although there were differences among rural and urban students with regard to which aspect of the RLOs they liked the most and which they wanted to modify. The rural students specified concept explanation and illustration as the most useful, while the urban students did not notice the distinction between these two aspects of the content. Also, unlike the rural learners, the urban learners were vocal about the technology components of the RLOs and they suggested the addition of pictures, animations, and games to the repository. Both rural and urban learners agreed that the RLOs boosted their confidence in facing examinations and interviews. However, their priority seemed to be sitting for examinations and they are not yet clear about how they will apply the concepts learned from using the RLOs in a work situation. Ninety percent of the respondents liked the culture-specific references, brevity of the RLO, and simple conversational language used. But the respondents were divided over whether use of the RLOs requires teacher presence.

While the learners expressed a positive response to the RLOs, the teachers were generally unresponsive, with only 10 teachers submitting evaluation questionnaires. The teachers who responded rated the structure of the RLOs as good and very good. However, like the urban learners, they did not perceive the three-part division of the RLO. Also, like the learners, the teachers felt strongly that soft skills have to be tested, which suggests that they viewed the RLO suite as satisfying classroom needs and they did not necessarily look beyond the exam orientation. The teachers likewise felt that translation of the RLOs will ensure their reuse and better comprehension for “weak” students. Moreover, while 75% of the teachers acknowledged that the RLOs facilitate independent learning, during the testing sessions they were observed to be using the RLO as another handout or supplementary resource, and they were attempting to “teach” it. Three quarters of the teachers said they were willing to contribute to the expansion of an OER repository but none of them specified the type of contribution they can make, in contrast to specific inputs by students for the same question.

Like the teachers, the administrators took a cautious approach in their responses to the questionnaire. All of them agreed that OER will be beneficial to their institutions. However, only half believed that OER will change the present equation in terms of outsourcing, teacher workload, recruitment, and the like. Instead they considered the RLO suite as a supplementary resource that would add to their foundation courses, library acquisitions, and language laboratory software. The administrators were non-committal about allowing their faculty to share OER created in their institutions. However, all said they will review, remix, and redistribute the RLOs on soft skills.

Aside from evaluating the effectiveness of the RLOs, the sub-project included an assessment of cost benefits from developing the RLOs through a comparison of the cost of producing other types of educational resources such as print resources and Web-based content. Assuming a user base of 1,000, it was found that the cost of developing RLOs is comparable to the cost of in-house preparation of print resources. Aside from the quantitative benefits,

there are positive qualitative indicators for the use of OER, namely, institutional validation and customization, and cost reduction with reuse and/or additional users.

6.3 Research Outputs from the Sub-Projects

Aside from their research findings, the country-specific and regional sub-projects yielded a number of research-based publications, which are listed by category in Tables 5-9. All sub-project teams presented aspects of their respective studies at public fora, workshops, and conferences within the 30-month duration of the project. Nineteen of these presentations were full conference papers (Table 6). A total of 11 journal articles and published reports were produced by sub-projects 4, 6, and 7 (Table 5), and two book chapters were published from sub-project 7b (Table 7). The research outputs of sub-projects 6 and 7 included one book each (see Table 8) consisting of more than a dozen chapters on various aspects of QA and OER production and use in Asia written by sub-project team members and their associates from various Asian jurisdictions. Both books were released in the first quarter of 2013. In sum, through these academic publications, findings from the O&QA sub-projects can be reviewed and extended by other DE scholars and researchers in the region and beyond.

In addition to academic publications, two policy papers were produced in connection with sub-projects 1 and 3 and sub-project 7b (see Table 9). The first policy paper, which was informed by the work in sub-projects 1 and 3 among others, is a policy framework for open and distance learning in Cambodia produced and submitted to the Cambodian Ministry of Education, Youth and Sport following a national policy dialogue held in March 2012. The second policy paper, which was an offshoot of the work in sub-project 7b, presents recommendations for the adoption of OER in the University of Madras and affiliated institutions. These policy papers represent part of the O&QA project's work in influencing policy which is discussed further in section 7.3.

Table 5. Journal articles and published reports

Sub-project	Title
4	<p><u>Research articles in peer-reviewed scientific journals in English</u></p> <ol style="list-style-type: none"> 1) Davaalkham, D and Lkhagvasuren, Ts. (2011). Awareness and attitude about hypertension, breast and cervical cancers among rural population: A baseline survey prior to intervention. <i>Mongolian Journal of Health Sciences</i> 8(2): 139-144. 2) Davaalkham D et al. (2010). National survey on the knowledge, attitude and practice of nurses regarding hepatitis B virus transmission and vaccine handling. <i>Mongolian Journal of Health Sciences</i> 7(2): 98-103. 3) Shatar, Sh; Davaalkham, D; Otgon, G and Lkhagvasuren, Ts. (2010). Coverage of national infant vaccination among children in Mongolia. <i>Mongolian Journal of Health Sciences</i> 8(2): 69-74. <p><u>Research articles in peer-reviewed scientific journals in Mongolian</u></p> <ol style="list-style-type: none"> 4) Shatar, Sh; Davaalkham, D; Davaa, G; Batzorig, B; Angarmurun, D; and Lkhagvasuren Ts. (2011). Knowledge of the vaccinator nurses working in health organizations regarding hepatitis B vaccine. <i>Health Sciences</i> 15: 63-66. 5) Shatar, Sh; Davaalkham, D; Batzorig, B; Khuderchuluun, N; Ganchimeg, U; and Lkhagvasuren, Ts. (2011). Current situation of the storage of hepatitis B vaccine in hospitals. <i>Health Sciences</i> 15: 11-15. 6) Oyun, S; Davaalkham, D; Amarsaikhan, D; and Lkhagvasuren, Ts. (2011). Knowledge, attitude and practice regarding the risk factors for non-communicable diseases among rural citizens in Mongolia: Baseline survey prior to distance education. <i>Journal of Medical Education</i>. 3: 49-50.
6	<ol style="list-style-type: none"> 1) Jung, I.S., Wong, T.M., Li, C., Baigaltugs, S., & Belawati, T. (2011). Quality assurance in Asian distance education: Diverse approaches and common culture. <i>The International Review of Research in Open and Distance Learning</i> 12(6): 63-83. Available at http://www.irrodl.org/index.php/irrodl/article/view/991/1953 2) Jung, I.S. (2012). Asian learners' perception of the quality in distance education and gender differences. <i>The International Review of Research in Open and Distance Learning</i> 13(2): 1-25. Available at http://www.irrodl.org/index.php/irrodl/article/view/1159/2128
7	<ol style="list-style-type: none"> 1) Abeywardena, IS; Chan, CS; Tham, CY; Dhanarajan, G & Balaji, V. (2012). Searching for academically useful open educational resources through the OERScout text mining system. (in review) 2) Abeywardena, IS; Raviraja, R & Tham, CY. (2012). Conceptual framework for parametrically measuring the desirability of open educational resources using D-index. <i>International Review of Research in Open and Distance Learning</i> 13(2): 104-121. Available at http://www.irrodl.org/index.php/irrodl/article/view/1177/2181 3) Abeywardena, IS. (2012). A Report on the Re-use and Adaptation of Open Educational Resources (OER): An Exploration of Technologies Available. Commonwealth of Learning (COL). Available at http://www.col.org/resources/publications/Pages/detail.aspx?PID=411

Table 6. Papers presented at scientific conferences

Sub-project	Title
4	<p>1) Davaalkham, D et al. (2011). <i>Hepatitis B vaccination program and KAP of nurses regarding the vaccination in Mongolia</i>. Paper presented at the American Public Health Association 139th Annual Meeting and Exposition. 29 October - 2 November 2011, Washington DC, USA.</p> <p>2) Davaalkham, D and Lkhagvasuren, Ts. (2011). <i>Knowledge, attitude and practice of nurses regarding vaccine handling in Mongolia: Baseline survey and distance education</i>. Paper presented at the 25th Asian Association of Open Universities (AAOU) Annual Conference, 28-30 September 2011, Penang, Malaysia.</p>
5	<p>1) Bonito, S. (2011). <i>Development of a multimedia courseware for virtual clinical experience in Nursing using the cognitive load theory</i>. Paper presented at the 25th Asian Association of Open Universities Annual Conference, 28-30 September 2011, Wawasan Open University, Penang, Malaysia.</p> <p>2) Bonito, S. (2012). <i>Evaluating design and content of a multimedia courseware in nursing</i>. Paper presented at the 26th Asian Association of Open Universities Annual Conference, 16-18 October 2012, Chiba, Japan.</p> <p>3) Bonito, S. (2012). <i>Use of virtual clinical experience courseware in nursing</i>. Paper presented at the Philippine Nurses Association Annual National Conference, October 2012, Manila, Philippines.</p>
6	<p>1) Zuhairi, A., Belawati, T., Nugraheni, E., Sadjati, I.M., PKH, Y., & Isman, S.M. (2011). <i>A provider survey on the quality of distance and e-learning in Asia</i>. Paper presented at the 25th AAOU Annual Conference, 28-30 September 2011, Penang, Malaysia.</p>

Sub-project	Title
7	<ol style="list-style-type: none"> 1) Dhanarajan, G. (2010). <i>A study on the creation and use of open educational resources in some parts of Asia</i>. Paper presented at the Fifth International Conference on University Leadership: Bringing Technology Enabled Education to Learners of All Ages, May 2010, Learning International Consortium, MIT, Boston, USA. 2) Dhanarajan, G. (2010). <i>Sustaining open educational resources – lessons from open distance education</i>. Keynote presentation at the Conference on Open Educational Resources: Impact and Sustainability, organized by the International council of Distance Education in Barcelona, Spain. 3) Dhanarajan, G. (2010). <i>Thoughts on open distance education: has it outlived its course?</i> Keynote presentation at the 24th AAOU Annual Conference, October 2010, Hanoi, Vietnam. 4) Dhanarajan, G. (2011). <i>Open educational resources: What does it mean to open learning in higher education</i>. Keynote presentation at a Conference on Open Paradigms in Education (OPEN 11), February 2011, New Delhi, India. 5) Dhanarajan, G., & Abeywardena, I.S. (2011). OER in Asia: The gap between aspirations and practice. Paper presented at the 24th International Council for Distance Education World Conference, October 2011, Bali, Indonesia. 6) Abeywardena, IS & Dhanarajan, G. (2012). Open educational resources in Asia. Paper presented at the Symposium on E-learning and Open Educational Resources: Practices and New Initiatives organized by the Open University of Hong Kong (OUHK), 18 April 2012, Hong Kong. Recording and slides available at http://oer.ouhk.edu.hk/2012.php 7) Abeywardena, IS & Dhanarajan, G. (2012). OER in Asia Pacific: Trends and Issues. Keynote address at the Policy Forum for Asia and the Pacific: Open Education Resources organised by UNESCO Bangkok and Commonwealth of Learning (COL), 23-24 April 2012, Thailand. Report available at http://www.unescobkk.org/education/ict/online-resources/databases/ict-in-education-database/item/article/oer-in-asia-trends-and-issues/ 8) Abeywardena, IS; Dhanarajan, G & Chan, CS. (2012). <i>Searching and locating OER: Barriers to the wider adoption of OER for teaching in Asia</i>. Paper presented at the Regional Symposium on Open Educational Resources: An Asian Perspective on Policies and Practice, September 2012, Penang, Malaysia. 9) Abeywardena, IS; Tham, CY; Chan, CS & Balaji. V. (2012). <i>OERScout: Autonomous clustering of open educational resources using keyword-document matrix</i>. Paper presented at the 26th AAOU Annual Conference, October 2012, Chiba, Japan. 10) Daryono. (2012). <i>Open educational resources policy in Indonesia: responding to barriers</i>. Paper presented at the 26th AAOU Annual Conference, October 2012, Chiba, Japan.
7b	<ol style="list-style-type: none"> 1) Harishankar, VB. (2011). <i>Designing culture-specific and portable RLO-based OERs: An Indian experiment</i>. Paper presented at Open Educational Resource 2011 Conference, 11-13 May 2011, Manchester, UK. 2) Harishankar, VB. (2011). <i>Towards a psycho social framework to assess the individual and institutional readiness to embrace open educational resources</i>. Paper presented at the 25th AAOU Annual Conference, 28-30 September 2011, Penang, Malaysia. 3) Harishankar, VB. (2012). <i>Matching OER ideals and practices in India: A survey</i>. Paper presented at Cambridge 2012 Conference, 16-18 April 2012, Cambridge University, UK.

Table 7. Book chapters

Sub-project	Title
7b	<p>1) Harishankar, VB. (2011). Frames for collaborative teaching and learning through open educational resources. In Harishankar, VB. <i>Designing Teaching Learning Resources for Language and Literature: Case Studies</i>. Chennai: Vijay Nicole Imprints Ltd. Pp. 89-96.</p> <p>2) Harishankar, VB. (2012). Tracing the trajectory of OER in India: Reflections on three initiatives. in Glennie, J et al. (eds.). <i>Open Educational Resources and Change in Higher Education: Reflections from Practice</i>. Vancouver : COL & UNESCO. Pp. 41-56.</p>

Table 8. Books

Sub-project	Title
6	Jung, IS; Wong, TM & Belawati, T. (Eds.). (2013). <i>Quality Assurance in Distance Education and E-learning: Challenges and Solutions from Asia</i> . New Delhi, India: Sage Publications India Pvt Ltd. and IDRC.
7	Dhanarajan, G & Porter, D. (Eds.). (2013). <i>Open Educational Resources: An Asian Perspective</i> . Vancouver, Canada: Commonwealth of Learning and OER Asia.

Table 9. Policy papers

Sub-project	Title
1 & 3	Open Distance Education Policy Framework and Good Practice Guidelines for the Kingdom of Cambodia
7b	Open the Portals: Introducing Open Educational Resources (OER) at University of Madras (UNOM) and Affiliated Institutions — A Policy Paper

6.4 Other Outputs

The sub-projects also produced a number of DE materials and courseware (Table 10).

Table 10. DE courseware

Sub-project	Items	Format and Other Details
1	<p>5 multimedia modules:</p> <p>1) Module 1. Introduction to Agriculture</p> <p>2) Module 2. Rice Farming</p> <p>3) Module 3. Animal Raising</p> <p>4) Module 4. Vegetable Farming</p> <p>5) Module 5. Forage Crop Farming</p>	<p>text + photos/images + videos + interactive quizzes developed using eXeLearning, an open source authoring application</p> <p>coverage: 49 lessons</p>

Sub-project	Items	Format and Other Details
3	10 multimedia learning packages in the following Grade 7 subjects: 1) Biology 2) Chemistry 3) Earth Science 4) English 5) Geography 6) History 7) Khmer Language and Literature 8) Mathematics 9) Morals 10) Physics	text + photos/images + interactive quizzes developed using eXeLearning, an open source authoring application
4	16-chapter DE material on Hepatitis B vaccine management	text/print material
	4 television programs on non-communicable diseases	2 episodes per program two formats: animation-based and still picture-based
5	1 interactive multimedia courseware on clinical nursing practicum	5 case studies + lessons + orientation
7b	250 reusable learning objects on soft skills	text files, pictures with annotations, audio and video files

These DE resources were developed in accordance with instructional design principles — i.e., alignment, relevance, appropriate and effective use of media, and usability — and the principles of cultural appropriateness and gender fairness. They may be improved upon and adapted for DE programs and courses similar to those for which they were designed and developed, in order to benefit a greater number of learners and communities.

In the case of sub-project 1, CSUK is in the process of introducing the multimedia modules to other organizations, including the Children and Life Association (CLA), a Cambodian NGO and a telecentre initiative forming part of the Tonle Sap Poverty Reduction and Small Holder Development Project funded by the ADB Project and IFAD. In the case of sub-project 4, the DE training material on vaccine management has been reviewed and edited by the Immunization Unit Head of the National Centre for Communicable Diseases for distribution nationwide in Mongolia to all nurses in charge of vaccination. Also, administrators of the Provincial Health Departments of Bulgan and Arkhangai provinces in Mongolia have agreed to use the television programs with animation that were developed in Sub-project 4 for future health education for citizens in these provinces where health education is often provided through local TV channels. Three national broadcasting TV channels have likewise agreed to air the television programs as part of their health education program. These channels have been encouraged to develop other animation-based television programs in health for the general population.

Similarly, there are plans of sharing as OER the courseware and RLOs developed in Sub-projects 5 and 7b, respectively, with other institutions.

In the case of sub-project 7, an online portal called OER Asia was developed to encourage the sharing of resources about OER — including information, views and opinions, research

findings, knowledge resources, and guidelines and toolkits — among teachers, students, researchers, and content developers among others. Thus, OER Asia aims to contribute to knowledge sharing, capacity development, and community building around OER in the Asian region. The portal was launched in October 2011 and to date it has had more than 2,000 visitors from countries in Asia and the Pacific, as well as Africa, Europe, the Middle East, and North and South America. It is hoped that with continuing communication to build awareness and interest and encourage knowledge- and community building, the portal will be sustained beyond the end of the study.

7. Project Outcomes

For individual sub-projects and the O&QA project as a whole, the target outcomes were achieved for the most part, particularly with regard to capacity development and knowledge building. Other project outcomes in the area of policy influence were achieved as an indirect result of project activities, including some that were not planned at the outset of the project but which came about as a natural consequence of the research and development process. In the discussion that follows, we include issues and challenges encountered during the project implementation and the limitations on the project outcomes that these posed.

7.1 Capacity building

The main outcome of the five country-specific studies (including Sub-project 7b) was the integration of ICTs in non-formal programs in farming and health education, and formal courses at the basic education level (lower secondary) and tertiary (undergraduate and graduate) education level for delivery by DE mode. This resulted in the development of new knowledge and skills for individuals and communities, as follows:

- Sub-project 1: 90 farmers in Cambodia
- Sub-project 3: 16 Grade 7 students in Cambodia
- Sub-project 4: 29 vaccinator nurses in Mongolia
- Sub-project 4: 200 citizens in two provinces in Mongolia
- Sub-project 5: 88 Master of Arts in Nursing students in the Philippines
- Sub-project 7b: 634 learners who pilot-tested the RLOs in India
- Sub-project 7b: 59 teachers who reviewed the RLOs in India

Sub-project 7 also provided skills training in OER development to at least 75 individuals, including the country-specific sub-project team leaders, at three workshops in Hanoi, Vietnam and Penang, Malaysia.

A good number of those whose knowledge and skills were enhanced by their participation in the sub-projects were female. In the case of sub-projects 1 and 3 the inclusion of female learners was given particular attention to ensure gender balance. In contrast, in sub-projects 4 and 5 the participation of women was not considered an issue since most nurses are female. Women also comprised the majority of rural folk who participated in sub-project 4.

The sub-projects also developed among their team members knowledge and skills in DE program design, development, and administration; DE materials design and development; and project monitoring and evaluation. These sub-project personnel included the following:

- At least 10 university lecturers in the case of Sub-projects 1, 4, 5 and 7b
- 10 Grade 7 subject teachers in the case of Sub-project 3
- School administrators and provincial Education officials in the case of Sub-project 3
- At least 4 multimedia designers in the case of Sub-projects 1, 3, and 5
- Four learning facilitators in the case of Sub-project 1 and 3

It is important to note that in almost all cases, their starting point was zero knowledge and experience of DE and developing DE materials and courses, including OER. Hence the value of the training they received in the course of implementing the sub-projects. Aside from skills development, some of the sub-project workshops also served as advocacy sessions in terms of helping sub-project personnel to appreciate open and distance learning (ODL) perspectives, principles, and practices. These capacity building efforts were not always successful. For example, some of the content writers were unable to appreciate quality standards and adhere to quality assurance procedures. Moreover, even when there is enhanced awareness and acceptance of ODL, the technical skills necessary to implement it effectively takes time to develop.

7.2 Knowledge-building

In the area of knowledge-building, the sub-projects tried out approaches to distance education and training for various groups of learners at different educational levels in a range of fields:

- DE mode non-formal training in integrated farming for farmers, using multimedia courseware, community learning centres, and mobile phones
- DE mode lower secondary education for out of school youth, involving group-based study of multimedia courseware at a community learning centre
- Community health education using broadcast television and mobile phone technology
- DE mode training of rural health workers using text-based DE materials and SMS technology
- Virtual clinical experience courseware for an online clinical practicum course for nurses
- RLO-based OER for soft skills development for tertiary students

The research findings from the piloting of these approaches provide empirical evidence of the relative effectiveness of ODL as a means of developing knowledge, skills, and attitudes among learners in various contexts, including rural and remote communities. Learner performance in course exams and assignments indicated no significant difference in the learning achievement of participants and non-participants in the DE programs tested. Moreover, post-course interviews and surveys found high levels of learner satisfaction with the new way of learning that they had experienced. While impact on learner behaviour outside of the programs was not observed directly, responses to post-intervention questionnaires suggest that the learners are applying or intend to apply what they have learned in their practice.

As with any research-based evidence, the validity and reliability of these findings may be examined. In any such review, it is important to bear in mind the developmental aspect of the country-specific sub-projects. In many cases ODL as a mode of learning was new to the training/course participants as well as to sub-project team members. The country-specific sub-projects employed a design-based and action research methodology characterized by iterative analysis, design, development, implementation, and evaluation in order to arrive at

contextually-sensitive design principles and improve educational practice within real-world settings. In looking back at the implementation of the sub-projects, team leaders have identified some areas for improvement, such as including basic ICT skills training for the learners in Sub-projects 1 and 3 and adopting strategies to improve learner access to course materials in Sub-projects 1, 3 and 7b. Looking forward, the sub-project team leaders noted the need to disseminate the DE materials developed within the sub-projects to a wider population and to further study their effects not only on teaching and learning but also on change in practice (e.g., farming practices in the case of Sub-project 1, vaccination management and health promoting behaviour in the case of Sub-project 4, and patient care in the case of Sub-project 5).

With regard to the regional sub-projects, the research findings regarding QA practices in Asian DE and e-learning institutions, and OER-related knowledge, attitudes, and practices among Asian academics, underscore the need for knowledge- and community-building as well as policymaking in these areas.

7.3 Policy influence

Some of the advocacy and network-building efforts of sub-project team leaders may be seen as efforts to influence policy to some extent, at least within their own institutions. Specific examples include the following:

- Sub-project 4: The DE learning methods piloted in the sub-project have been included in HSUM's policy of DE for nurses and doctors' graduate training, with the Graduate Training Centre of HSUM and the Department of Epidemiology and Biostatistics, School of Public Health collaborating on a two-credit DE course on research methodology for nurses and doctors.
- Sub-project 7: The sub-project was catalytic in the development of OER policy guidelines at the Wawasan Open University.
- Sub-project 7b: A detailed analysis of the process of developing RLO-based OER was undertaken and a policy paper on OER for the University of Madras was prepared and submitted for approval by university officials.

There were also attempts to influence national policy, thus:

- Sub-project 3: With support from IDRC and in cooperation with Cambodia's Ministry of Education, Youth and Sport (MOEYS), a Policy Dialogue on Open Distance Learning (ODL) was held in Phnom Penh on 28-30 March 2012 and a national ODL policy framework has been drafted and presented to the MOEYS for approval and nationwide implementation.
- Sub-project 4: By order from Mongolia's Minister of Health, the project leader was appointed to the National Immunization Technical Advisory Group, which oversees management of training for all health care workers in the field. Her presentation of the results of the study to the technical advisory group has elicited interest in training by DE mode among health authorities. For example, the State Health Department which also provides graduate training will be piloting DE mode training.

- Sub-project 6: Sub-project team members from Malaysia and Indonesia worked with their own country's QA agency in developing guidelines for QA in DE. The sub-project team also provided policy suggestions for QA in formal DE in China, Mongolia, and Korea and non-formal DE in Mongolia, Laos, Vietnam and Cambodia. Policymakers in non-formal education from Laos, Cambodia and Mongolia are planning to develop QA policies and standards in distance and face-to-face non-formal education.

In Sub-projects 6 and 7 regional policy workshops and symposia were organized (see section 5.2) and advocacy work was undertaken with regional organizations such as the ASEAN University Network and AAOU, in order to sensitize academic leaders and education policymakers across the region to the need for policy development in QA in DE and e-learning and OER creation and utilization, respectively. Some concrete developments in this regard include the application of the QA model developed in Sub-project 6 in the development of the ASEAN Cyber University Quality Assurance Manual, and a formal recommendation to the AAOU Executive Board to promote and support OER in ODL through AAOU adoption of OERAsia, among others.

However, it should be recognized that policy influence is a complex process, and the dissemination of research findings is necessary but not sufficient for the proposed policy frameworks to be adopted and implemented, especially at the level of institutions. Indeed, the research findings from Sub-projects 6 and 7 indicate, respectively, that QA in DE in many lower middle and middle income Asian countries is still at an early stage of development, and OER-related practice in higher education institutions in Asia is still largely emergent. In addition, the country-specific sub-projects provide insights into the magnitude of the challenges that need to be addressed — i.e., the need for awareness raising, knowledge-building, practitioner development as well as policy development — when developing OER and meeting QA requirements in ODL.

8. Conclusion and Recommendations

Two overarching research questions underpinned the O&QA project:

- 1) To what extent is DE using the new ICTs a viable solution to expanding openness and access to lifelong education opportunities to remote and marginalized communities in Asia?
- 2) How best can the new technologies and arrangements such as OER be applied to design, develop, and share curriculum, technology applications, and assessment and evaluation methods to assure quality both for formal and non-formal learning, within manageable costs?

The first research question was addressed by the country-specific sub-projects implemented in Cambodia (Sub-projects 1 and 3), Mongolia (Sub-project 2), and the Philippines (Sub-project 5), while the second research question was addressed by the region-wide surveys and case studies (Sub-projects 6 and 7).

The country-specific sub-projects demonstrate that DE approaches incorporating new technologies such as interactive multimedia software and mobile phones, can broaden access to lifelong learning especially for those with little or no opportunity to acquire formal education and training, such as out-of-school youth, farmers, health workers in the rural

areas, and nomadic communities. In short, these sub-projects provide an affirmative response to the question of *whether* ICT-supported DE can expand the reach of educational programs to include marginalized individuals and communities. In this sense, they provide a partial answer to the first research question regarding the *extent* to which ICT-supported DE is a viable solution to lack of access to education. Given a starting point of zero experience with ODL in general (e.g., in Cambodia) or with specific ODL applications (e.g., virtual clinical nursing practicum, SMS-based assessment of learning), this is perhaps not surprising. The sub-project reports point to the developmental work that is required before sufficient attention can be given to systematically measuring program or course effectiveness and efficiency, as well as scalability and sustainability. It is therefore recommended that this systematic measurement, using both qualitative and quantitative methodologies, be the focus of future research. For this future work, the country-specific sub-projects provide a useful baseline for both ODL program development and evaluation.

With regard to the second research question, the findings from the region-wide surveys and case studies undertaken in Sub-projects 6 and 7 provide suggestions regarding how the new practices of open education, including resource sharing and quality enhancement, might be promoted in Asia. A key finding is that the process of change (of frameworks and methodologies) is multidimensional and evolutionary. This lesson may be gleaned as well from the country-specific sub-projects, which may be read as case studies in openness and quality assurance in DE in addition to those provided in case study components of Sub-projects 6 and 7. More specifically, the case studies draw attention to the relevance of:

- new conceptions of quality, in particular a shift in focus from content to pedagogy, arising from the sharing, use, and reuse/repurposing of content;
- a quality culture approach that is participatory, development-oriented, value-based, and culturally-sensitive; and
- a holistic and integrated approach to ODL.

The results of the country-specific sub-projects likewise underscore that the effectiveness of an ODL program depends not on any one medium or technology and/or a single approach but on a combination of media and approaches that takes learner needs and capacities and the learning context as a whole into account. The ‘older’ or more traditional text-based and television-based approaches to DE remain relevant especially for broadening access to education in rural and remote communities. As access to interactive multimedia, the Internet, and mobile technologies in these communities improves, optimum combinations of old and new media and DE approaches that can result in effective learning may be explored. Similarly, there is a variety of teaching and learning strategies to choose from, including independent study, group study with a learning facilitator, experiential and authentic learning, as well as combinations of these and their variants, depending on learner characteristics, pedagogical priorities, and the learning environment.

In sum, the sub-projects and the O&QA project as a whole provide research-based evidence that point to the value of DE in lifelong learning and human resource development in Asian contexts. The evidence provided should help to inform further research as well as policy development towards improving the openness and quality of distance education for all in Asia. Besides the tangible outputs the design of the project as whole, underpinned by the belief that Asian nations while sharing similarities in their approach to educational provisions and services also differ in their strategies to deliver these services. Many Asian countries have rich experiences in using educational technologies for a long time; others are more recent entrants. The sub projects that made up this meta study is a reflection of that mixture.

On the one hand countries such as Indonesia, Malaysia, Philippines, China and India have long experience using technologies in delivering distance education and on the other those such as Cambodia, Tibet, Nepal and Laos are relative beginners. The PANdora projects aimed at creating a network of scholars both experienced and neophytes in the belief that such a south-south collaboration of peers would bring bigger benefits. By and large this project seems have achieved that objective.

Though the subprojects were not identical in their detail they all shared a similarity in wanting to investigate and gather evidence of the effects of various ICT-supported DE approaches and technologies in terms of learner reactions, knowledge and skills acquisition, application and organizational arrangements including awareness, knowledge and practice of quality assurance and emerging technological innovations. Investigators with more experience as researchers and practitioners in DE inducted and supported the neophytes on design, methodologies, analysis and reporting. The relationship among them was balanced and mutually supportive at a peer to peer level. Organizing and managing networks of this nature, as in this case, was productive and immensely useful in building capacities and capabilities. This is best illustrated as in the cases of:

- Cambodia where there was an absence of policies in bringing about innovations in the practice and delivery of education, the peer groups were instrumental in designing the two studies and on the basis of evidence gathered help design a policy framework on Open Distance Education for that country's Ministry of Education, Youth and Sports. The framework is gradually moving its way through the bureaucracy for legislation. Implementation if the policy is legislated will depend on finance, capacities and politics.
- Mongolia the design, supported by network colleagues, is leading towards better construction and delivery of health training materials using televised animations for rural health workers.
- Generating evidence to support the benefits of technology intervention in improving the quality of educational delivery and pedagogies [SP6 and SP7]
- Collaborative efforts in building local capacities through a South-South engagement. Other than Japan all participants in these studies came from middle and lower middle income countries.

Notwithstanding the above mentioned successes, there were also lessons that were learnt in the series and successions of studies stretching well over eight years. Some that stand out include:

- The level of coherence between the projects could have been better achieved had we embedded sub projects 1-5 within the context of sub projects 6 and 7. We reflectively asked ourselves if there would have been value added if, say, the design and development of learning materials in Cambodia and Philippines should have been through the acquisition of Open Educational Resources and the applying best practice in the delivery systems. Findings would have strengthened the evidence towards ODL policy development in countries which are beginning to explore ODL as one of their provisions.
- More benefits would have accrued through more frequent meetings of the subproject leaders especially at the start of the studies. The shortage of time, to execute and complete the studies within two years precluded this from happening. Battling between time on the one hand and local bureaucracy on the other meant a rush towards getting started quickly even before some of the studies were ready to start. The returns from networked studies towards achieving specific objects could be much

greater with increased time in planning and strengthening relationships of those making up the network.

- Participants in this network were not on a level playing field in terms of their knowledge of ODL, familiarity with and the use of learning technologies, English language competencies [as this was the common language of all networkers] and research cultures and expectations. These were impediments.
- Progressing from research findings to policy development is a time consuming effort that will require further and continues support. While these studies are being catalytic in Cambodia [e.g. ODL policies], most institutions and governments in Asia [e.g. OER], and in all jurisdictions [Enhancing Quality Assurance processes in of ODL provisions], there is currently there is little hope of sustaining the network created over a long period of eight to nine years that would be required.
- The glue that held this network together both in terms of intellectualism and management was the Management Board and IDRC staffers. The role of the latter cannot be undervalued both at an intellectual and administrative level. Low income developing countries are special beneficiaries of the passion that IDRC regional staffers bring to developing research capacities. In this respect the closure of the ASRO offices will be particularly missed.

9. References

- Baggaley, J & Belawati, T. (Eds.) (2009). *Distance Education Technology in Asia*. IDRC and Sage India. Available at http://www.pandora-asia.org/downloads/Book-2/PANdora-book2_v6.pdf.
- International Labour Organization (ILO). (2003). *Lifelong Learning in Asia and the Pacific*. Report of the ILO Regional Tripartite Meeting on Lifelong Learning in Asia and the Pacific, December 2003. Available at <http://www.ilo.org/public/english/region/asro/bangkok/skills-ap/info/publ/index.htm>.
- Kaufman, R; Keller, J & Watkins, R. (1995). What works and what doesn't: Evaluation beyond Kirkpatrick. *Performance and Instruction* 35, 2: 8–12. Available at <http://home.gwu.edu/~rwatkins/articles/whatwork.PDF>
- Kirkpatrick, DL. (1994). *Evaluating Training Programs: The four levels*. San Francisco: Berrett-Koehler Publishers, Inc.
- Latchem, C & Jung, IS. (2009). *Distance and Blended Learning in Asia*. New York & London: Routledge.
- Wang, F., & Hannafin, M. J. (2005). Design-based research and technology-enhanced learning environments. *Educational Technology Research and Development*, 53(4), 5-23.