# Rural Development in Asia through ICT-Supported Lifelong Learning

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ABSTRACT :

This Paper presents *Modern Open Learning* as the current state of the art at the forefront of a paradigm shift towards supported lifelong learning. The use of ODeL technology has moved in the past five years from administrative in distance education, to utilitarian in open learning. *Modern Distance Education* is characterized by policy-driven delivery of content for standardisation and conformity with students as objects of the teaching, while *Modern Open Learning* is characterised by preserving diversity and individualisation with the students as the subject of their own learning. The current *Modern Open Learning* model is highly cost efficient for nurturing growth in economic activities particularly in rural under-developed regions in Asia. The model can be mapped as the village being inside a cloud of oxygen, where the cloud includes the open university, micro-banking, electrification, marketing, and reporting, and the village includes the target learners with an insider such a school-teacher acting as a listener and communicator with the surrounding cloud services. The Transactional Distance Model explains how in practice the psychological transactional-distance goes from far-distance through collaborative stages towards zero-distance which is learning. The *Modern Open Learning* system works through *responsiveness* which is the cooperative use of reusable learning objects on the shelf, and through *empathy* which is the collaborative co-creation on-demand of new OER by experts at the open university working with all the various stakeholders. *Responsiveness* and *Empathy* have been previously identified as the Chinese characteristics of Modern ODeL practice. This Paper presents cases studies of *Modern Open Learning* for rural development in Asia to illustrate how this has worked to bring about user-wanted open learning and the economic benefits. The system is easily scalable and transmissible to other regions. The intended achieved outcome is that the system OER users, the short-course or degree graduates of *Modern Open Learning* become job-providers not job-seekers.

## 1. INTRODUCTION :

The Open University of China (OUC) has been at the forefront leading distance education in China for the past thirty years. The OUC consists of a nationwide system involving a central university in Beijing with 44 open universities essentially in each province, plus 1000 city universities. Together the enrollment exceeds 3.5 million active current students on degree courses, associate-degree diploma courses, certificate and non-credit courses throughout China. It is the largest distance education system in the world. The function of the OUC uses radio, television, telephone, satellite and Internet, as well as print and face-to-face lectures, examinations, and tutorials. The university remains deeply concerned with on-the-job education and training particular in rural areas. As with other open universities around the world, the OUC has operated distance education that has tended to be teacher-centred : courses have been designed and students enroll and follow the pre-designed curriculum. While there has been a trend to talk of learner-centredness, in reality for quality assurance purposes there needs to be centralized administration. However, the university is now rationalising the technical delivery of teaching to recognize the diversity of learners' wants and needs to evolve a more caring sensitive value-added system whereby users are much more in the driving seat.

In the past five years, the use of Information and Communication Technologies ICT in education has moved from being a delivery and administrative tool, to promoting self-learning interactions among students to promote non-formal lifelong learning. Massive amounts of resources are now collated and being made available to those wanting to study. Essentially this paradigm shift is from modern distance education to modern open learning. The term '*modern distance education'* is used in China to refer to the technologically-mediated institutional teaching at a distance, authorized by government policy. *Modern open learning* differs considerable from this, based on contrasting philosophy, see BOX 1 below for the differential definitions of distance education and open learning. Distance education refers to the teaching of pre-determined content to faraway students treating them as objects of the teaching, with an aim to achieve products that are indistinguishable from on-campus graduates - with same quality teaching, same materials and same examinations with same accreditation. Distance education values conformity to pre-set standards. ICT are used in distance education for the teaching and administration platforms. Open learning on the other hand values diversity, honours prior learning, starts from where the student is, and has the student at the centre of the learning as subject (not object) of the process. The quality of materials utilized in open learning, the learning process, routes or syllabus, the achieved learning skills and knowledge are all inevitably individualized, and they are not the same for any two persons. This Paper aims to set out the methods for *modern open learning* in China. As such this Paper is reporting the technique, rather than short-term assessments of achieved learning. These data will be reported separately. Two models are used to describe the technique of *modern open learning* ;- one is the Transactional Distance model that shows the process of learning in practice, and the other is the *Modern Open Learning* model that shows a cross-section of the system involving its component parts.

Distance Education :

policy-driven by institutions, delivery of content,
conforming to pre-set standards for accreditation
the student is the object of short-term teaching

Open Learning :

fosters harmony and diversity through individualisation
the student is the subject of lifelong learning

The role of distance education is somewhat distinct from and complementary to the role of open learning. And in many ways they are distinct from and complementary to the role of conventional education

BOX 1 : Defining Open and Distance Education

The Transactional Distance model is firmly underpinned by Transactional Distance Theory, Conversation Theory, and Constructionism. It is a key model for understanding the process for open learning - originally derived from the UK Open University course design in practice, and now validated in various other contexts - notably to explain the roles of student interactions (Kawachi, Feng & Zhang, 2008), and also the roles of telepresence (Kawachi, 2011).

The *Modern Open Learning* model shows the environment for efficient open learning in rural areas. Case studies data are briefly presented to validate this *Modern Open Learning* model. This model has the target users centrally with an open university in the background linking case examples (for the users), reporting and publishing (to satisfy stakeholders), banks for micro-franchising, infrastructure for bio-fuels and electrification, and markets for transportation and additional emergent markets as the community expands productivity. There is also a local community hub of local teachers having basic ICT skills, and local ICT companies who provide equipment and technical services for profit. This paper looks at modern open learning in China, to show how ICT can be used effectively in context in local learning communities - where the aim is to foster individuals as job providers (to themselves and to others), not to mass-produce graduates who are job seekers.

## 2. METHODS :

Two models are presented here to show how the various theories work in practice. The first is the Transactional Distance model (Figure 1) where the transactional distance is the psychological distance between initially not-knowing and subsequently knowing. This model is based on the Transactional Distance Theory, Conversation Theory, and Constructionism. The Transactional Distance Model

offers a framework for the open learning process. The second is the *Modern Open Learning* model (FIGURE 3) which is a cross-sectional map of the supporting role of universities and ICT in open learning. This model is based on the Open Learning Theory - as opposed to Distance Teaching Theory.

*The Transactional Distance model*

The Transactional Distance model - shown in FIGURE 1 - is a four-stage iterative model of learning. Each Stage acts to further reduce this transactional psychological distance. The model depends essentially on the distinction between cooperative and collaborative learning, to bring about the critical thinking lifelong learning skills. The differential definitions of cooperative learning versus collaborative learning are briefly given in BOX 2 below, confirming they are mutually exclusive distinct ways of learning. In open and distance education a key theory is the Transactional Distance Theory of Moore (see Keegan 1996 for a clear interpretation) and the practical model derived from that theory of the Transactional Distance Model by Kawachi ((Kawachi, 2004a ; 2005a ; 2005b). Also there is the Conversation Theory of Pask (Pask, 1975) (see Mitchell & Grogono 1993 for a clear interpretation) and the corresponding Conversational Model of Laurillard in 1995 (see the second edition, Laurillard, 2002). The Transactional Distance model also is based on Papert's Constructionism (Harel & Papert, 1991) - essentially starting from where the student is, and building up learning in the mind through reflection and mastery for critical thinking skills.

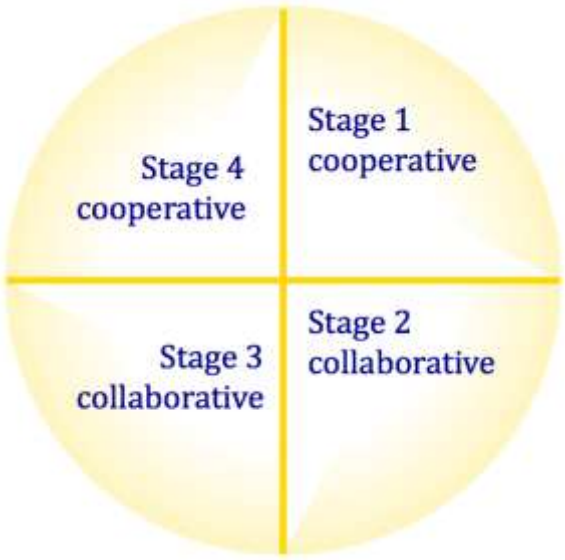


FIGURE 1 : Transactional Distance model

The Transactional Distance model focuses attention on the need for collaboration in the critical thinking skills Stage 3. Research has found that the cooperative learning occurs commonly to the exclusion of the collaborative learning (Kawachi, 2005b). Some scaffolding for collaborative learning was found to be effective in rural China by Feng, Zhang & Chen (2008), but this was rated by the teachers and students as less useful than the scaffolds for cooperative learning (Kawachi &

Sharma, 2011). The key collaborative Stage 3 involves disjunctive reasoning to reflect on all possible alternatives. This model explains that in Stage 3 the student should reflect and consider alternatives, and so learn critical thinking skills - which can later be used more automatically in new situations.

Cooperative Learning :

involves a teacher or other participant who knows the content and delivers this to the others

Collaborative Learning :

co-creates new non-foundational knowledge which initially no participant knows

BOX 2 : Defining Cooperative and Collaborative Ways of Learning

Briefly the narrative learning process is explained according to Stage, as shown in FIGURE 2, and involving imposed Structure S and educative Dialogue D. Stage 1 (S- D-) is at maximum transactional distance for the student, Stage 2 (S+ D-) is closer, and the student engages institutionally imposed Structure, Stage 3 (S+ D+) is nearer to achieving the learning task, when some educative Dialogue is now involved to help the student consider all possible alternatives, and Stage 4 is closest at minimum transactional distance where the student has adopted new knowledge and is testing this out to finally learn. Further elaboration on how this model works in practice is available in Kawachi, 2007, with an overview given in TABLE 1 below.

| Transactional Distance | Stage | | | | |
|---|---|---|---|---|---|
| far | 1 | S – | | D – | |
| med | 2 | S + | added | D – | |
| low | 3 | S + | Structure | D + | added |
| zero | 4 | S – | | D + | Dialogue |

FIGURE 2 : The Process of Learning through reducing Transactional Distance

TABLE 1 : The Stages of the Transactional Distance Model

| | |
|---|---|
| Stage 1 | In Stage 1, there is cooperative gathering and sharing information, brainstorming and divergent thinking to frame the student's context. The transactional distance initially is at a maximum (S- D-) with no imposed Structure and no educative Dialogue. |
| Stage 2 | In Stage 2, there is lateral-thinking (creative thinking around the problem) to generate new ideas, and these supported by argument. Students discuss for example their own problem they have found which has brought them to participate in the current course, and then argue to identify possible solutions to each other's problems. Creative thinking is collaborative to combine seemingly disparate parts especially ideas contributed from others in different contexts into a new synergic whole. There is added Structure to the discussions (S+D-). |
| Stage 3 | In Stage 3, the tutor engages the students with guiding comments in what Holmberg (1983) has described as a guided didactic conversation, helping the students achieve the course Structural requirements of understanding the general concepts to be learnt (S+ D+). The tutor poses questions and students defend their formulations. This Stage 3 is characterised by hypotheses testing and logical straight-forward thinking (termed 'vertical' thinking in contrast to 'lateral' thinking) associated with problem-solving, and is collaborative. Students need sufficient time here for reflection, for cognitive connections and co-construction of new non-foundational knowledge. |
| Stage 4 | In Stage 4, the final stage, the course requirements have largely been already achieved and there is no Structure left, except to disseminate the achieved mental ideas and to test them out in real-life. This Stage 4 is characterised by experiential learning and is cooperative, and at minimum transactional distance (S- D+), in synchronous mode, with no imposed Structure and with educative Dialogue to assist the student to reflect on her studies. |

*The Modern Open Learning model*

The *Modern Open Learning* model - shown in FIGURE 3 - has the target users centrally with an open university in overarching position linking case examples (for the users), reporting and publishing (to satisfy stakeholders), banks for micro-franchising, infrastructure for bio-fuels and electrification, and markets for

transportation and additional emergent markets as the community expands productivity. There is also a local community hub consisting of the local teachers having basic ICT skills, and local ICT companies who connect up equipment and provide technical services for profit.

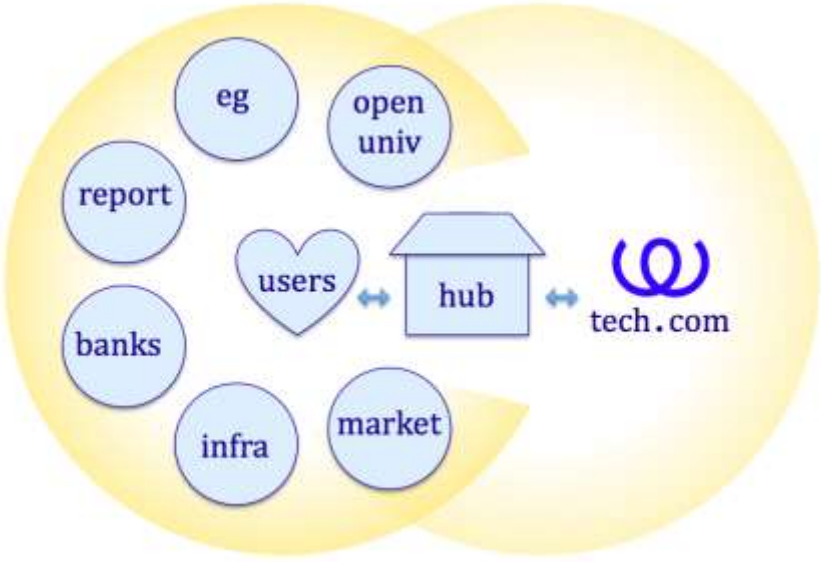


FIGURE 3 : Modern Open Learning model

In this model, the open university may be a provincial or national university, or an international institution providing access to learning resources and providing design competence and proficiency for creating learning resources - by own experts, by outsourcing to experts, or by the users themselves (student-created content).

This *Modern Open Learning* model functions to create job-related learning with coaching to rural communities at very low overhead costs. The symbolism of encircling the community is designed to represent 360° assessment which is highly transparent to everyone. Indeed the open university also operates self-assessment while it is listening to the wants and needs of the community and learning to adapt itself to better serve the community. In many ways the teaching university is being transformed into a learning university as it continuously improves and finely tunes the resources offered to the community. The open university draws on its own research and content experts to design resources. These experts collate and tag pre-existing resources. They encourage the end-users to adopt and adapt these to local needs and offer design expertise where extra resources not yet available have to be concocted on-the-road. In particular they listen and watch in order to see what new resources can be helpful, and they can then utilize international university networks to supply components on demand. The community becomes a learning community, but moreover all the stakeholders including the open university providing resources become learning organizations in this interconnected model.

Defining RLO, OER, OEP, ORE ...

RLO : re-usable learning object – smallest bricks
OER : open educational resource – free modules
OEP : open educational practice – use and create
ORE : open resources exchange – co-create, tag and share

*Tagging is Essential*

Tagging of educational resources is essential to find them easily to re-use. There are masses of OER nowadays and their numbers are increasing : In mid-October 2011, the learning management platform 'Blackboard' added a 'share' button (Young, 2011) to allow teachers to dump their materials into the public domain as OER, without re-packaging for other users and without tagging.

BOX 3 : Defining Open Resources

Drawing from the definitions of open educational resources in BOX 3 above, the new *Modern Open Learning* model re-uses some OER off-the-shelf, and co-creates with user input new ORE on-demand. These ORE, developed by the open university and the users together with any other experts as needed, are later tagged and stored and can be shared with other villages that share fittingness in context and learner wants.

The decision to use local schools as the hub for open learning is that these are the places where teachers are located : teachers can be reasonably expected to be computer literate or can be trained to be so in order to coordinate using ICTs with learning resources provided by a open university. Teachers in a loose sense exist in every community, and can circumvent the cost and need to train a technician from scratch. However school buildings are commonly found even in rural areas, but they may be empty or lack trained staff. Hence the point here is that trained staff function as the hub - not the concrete building. The pre-existence of physical school buildings in every locale is helpful but not essential. Adults have been found to participate in continuing education only if there is a physical building to meet together with others. So there seems to be some merit in co-opting school buildings as the physical space serving as the hub. Indeed school-based ICTs can be used for all ages of student - from pre-school through to retired old-aged persons.

Arrayed within reach around the users are (i) the open university, (ii) examples, (iii) reports, (iv) banking, (v) infrastructure, and (vi) markets. These are elaborated briefly as follows. It is difficult to see how open learning can occur if any one of these is absent.

| | | |
|---|---|---|
| (i) | open university | resources and a philosophy to reach the unreached |
| (ii) | examples | useful to show to users to stimulate the imagination |
| (iii) | reports | we need sharing across stakeholders and countries |
| (iv) | banking | micro-credit and other instruments are needed |
| (v) | infrastructure | electrification, roads, and equipment amongst others |
| (vi) | markets | job creation involves horizontal and vertical mobility |

Alongside the users there is a hub of local teachers or technician to serve as intermediaries between the end-users and the arrayed services, and at hand an ICT provider to maintain and service the telecommunications equipment efficiently.

## 3. RESULTS :

We present three case studies to illustrate various conditions, covered briefly as CASE 1, CASE 2, and CASE 3 below in boxes. In the first CASE 1, the education providers went out from the city into the village and told the villagers what they needed in order to develop. In the second CASE 2, the money providers went out from the city into the village and told the villagers what they needed in order to develop. In the third CASE 3, the local open university listened to the people and designed learning activities that the villagers wanted. These three cases adequately illustrate the pitfalls and challenges, and position these challenges within the two models of Transactional Distance and of Modern Open Learning. The Transactional Distance model explains that choices should be offered to nurture life-skills, while the Modern Open Learning model explains that a whole environment is needed - not just a lecture or cash credit.

### CASE 1 : Case Study on China

Case Study on China

In the 1990s, university experts went out into the villages alone, bicycling from village to village - wearing out bicycle tyres and later motorbikes to instruct farmers what to do. Later whole city university faculty departments went into the rural areas to give week-long lectures and workshops, sometimes taking new seeds and technologies with them, and at other times tractors (described in Zhang, 2003). Of course these efforts are unsustainable. Funding came from international or national NPO or other donors. Most of these efforts to alleviate rural poverty focused on telling farmers how to grow more crops, and little attention has been paid to rural schooling. Indeed Zhang (2002) relates that high school students graduated and could not find jobs, and had to return to the fields but with little or no farming skills. Being away from the farms to attend school only exasperated this lack in vocational skills. The rural population has decreased from 70% in 1996, to 50% in 2011 - with millions of rural migrant adults going into the cities as job-seekers.

CASE 2 : Case Study outside China

Case Study on South Asia, and Africa

Since 1995, micro-financing for rural entrepreneurs to start-up businesses has expanded remarkably in Bangladesh now reaching 8 million borrowers almost all of whom are women. The bank largely behind this has 22,000 employees and has been subjected to government investigation (cleared in April 2011) of charging overly high interest rates to the very poor (Bunting, 2011). Unregulated aggressive lending and high interest rates to the rural poor is also now (end July 2011) subject to government investigation in India (Dezan Shira, 2011). Since 1998, mobile telephone users in Africa have increased from 4 million to 500 million - almost half the population (Fox, 2011). They have developed bicycle-driven battery charging, for free electricity. Adopted from Norway and Japan, mobile (telephone) banking started in 2007 in Kenya and has spread to cover 85% of Uganda, and into neighbouring countries. Despite a 30% illiteracy rate and widespread technological illiteracy, money-lenders are leasing phones to community-knowledge workers that serve as the hub and who then interact with the illiterate farmers. The money-lenders are now developing images and video for the mobile phones to circumvent the village illiteracy.

CASE 3 : Case Study on China

Case Study on China

The Open University of China system involves a central university in Beijing and local universities in each province. In a degree course, some 70% of courses are compulsory and fully administered centrally, while the other 30% are designed and administered locally. Half-way between these, some courses are designed centrally and administered locally. In one faculty for example 30% of courses are fully centralised, 50% are designed centrally and delivered locally, and 20% are fully decided and administered locally. The success of devolution to local providers has developed the expertise of provincial open universities. Some foundational courses are offered nationwide, with lower costs to students in rural areas. Moreover, listening to the local people, courses were then designed in their local native language - illustrating how the expertise in the background can create and offer courses which are locally requested. Using the local language is efficient in early education as well as in adult literacy and lifelong learning (Kawachi, 2002 ; 2004b ; 2008). Some resources are now being copied by local entrepreneurs and further disseminated for profit (a method to extend reach to the unreached suggested and identified by Kawachi, 2008).

Massive numbers of adults in India have been given micro-credit effectively turning them into self-employed but re-paying overly high interest rates to savvy city money-lenders. In rural India, pupils attend schools for the free lunch pushing up the attendance rate to 100%, yet the pupils learn little : only 8% can pass the school leaving examination. Villagers need education and training for employable skills such as engineering to earn a living locally as mechanic, electrician, plumber or nurse. Clearly there is a need here for some fair better-organised system for village community learning.

In Africa, the remarkable use of mobile telephones has expanded the money-lender's own banking industry. The money-lenders have arranged for the cash-crops to be bought for a 'good price' by the World Food Programme (Fox, 2011) who then re-distributes this as local food relief. While food-miles might be reduced, there seems to be the necessary western tax-payer present as the WFP in order to pay the farmers so they can pay the money-transfer costs and the leases on their telephones to the money-lenders. The mobile telephone banking in Uganda has been limited therefore to cash-crops. It remains to be seen whether anyone would consider extending mobile telephone use to benefiting healthcare and education.

The Commonwealth of Learning (Daniel & Alluri, 2006) has introduced a format involving more two-way information called the 'Lifelong Learning for Farmers' project. This was introduced to India in 2004, and Sri Lanka in 2007, and recently Mauritius. In Sri Lanka, the Open University is now developing lessons for farmers (together with the Colombo University, Eastern University, Jaffna University, and Ruhuna University). Thus the cash-crops model there may soon move towards becoming a model for education. Some efforts are underway to evaluate the 'Lifelong Learning for Farmers' project. For example Kodhandaraman & Daniel (2010) report that in Sri Lanka they do not yet have in place the two necessary components of banks and market which are essential for a self-sustaining model (FIGURE 3). They are optimistic however, reporting that the Open University is negotiating at this moment with the Sri Lanka central bank. They report that they have managed to statistically increase food production (in terms of size and number of goats being reared), but markets are still not in place - concluding "it is still too early to call it a success".

In the *Modern Open Learning* model, electrification is essential to provide energy for ICT usage. Bicycle-driven generators can re-charge small batteries for use in mobile telephones, but more electricity is needed for computers. Some bio-fuel projects were started in Africa during the past five years, but many of these have since folded up business (Carrington, 2011). While the reasons in each case are unclear, at least 30 major projects in 15 countries in Africa (amounting to 32,000 sq km of bio-fuel plantations) have collapsed in the past year or so with massive debts. The average interest rate on microfinance loans is around 30%pa (Lendwithcare, 2012). This is more than double the London lending rate. The moneylenders justify this high interest rate on three counts (i) the administrative costs for many small loans is much higher than for making a single loan, (ii) the lenders must work harder to assess the risks particularly where there is collateral, and (ii) the lenders have to travel to remote rural areas to find customers.

## 4. DISCUSSION :

What is the purpose of education ? This question is key to understanding the need for developing a model of open learning that is highly practical while being based on sound theory. The term 'education' is very teaching-centred, and involves the process of three components ; teaching, delivery, and learning. The teaching component has been central for a thousand years, and delivery has become important in the past fifty years. Now and in the future the focus will be on learning, and away from teaching and away from delivery. We will no longer be concerned with how content is delivered since this will be entirely within the learner's individual domain - choosing herself whether to access text, video, lecture, group or building. The question of what is the purpose of education thus becomes - What is the purpose of learning ? There are some basic literacies and societal/social skills to be learnt. The literacies include languages, numeracy, health literacy, financial literacy, and computer literacies, while societal skills include human interaction skills, citizenship skills and so on. A taxonomy of what needs to be learnt can be constructed. There are five Domains of Learning ;- the Cognitive, Affective, Metacognitive, Environment, and Management Domain. The important point here is that the Management Domain covers coping with massive amounts of data, generally through using some personal knowledge management system. Students do not need to cognitively know everything ; instead we can use knowledge management systems. These involve creating, tagging, storing, searching, and retrieving skills.

In the *Modern Open Learning* model, there needs to be some one who has adequate knowledge management skills. If this person is among the target users that is best, in order to know culturally and empathically what is wanted and then being able to find it or ask for it accurately through telecommunications to the (open university) resources centre. Resources on demand can only function where the user can effectively retrieve what is wanted. Effectively here means accurately and discriminately : the retriever needs mastery in choosing search words that are able to recover a limited number of resources. These few resources can then be passed onto the end-users for them to explore to see which best suits their contextual needs.

CASE 1 shows that China is moving from an unsustainable education delivery system to a more sustainable lifelong learning system, but not yet open. CASE 2 shows with multiple references to projects that an over-emphasis on money can make banks rich but education is barely involved. CASE 3 shows an effective open learning system in China with the local regions designing and offering courses on topics wanted by the local people and at lower prices to suit the local people.

In China, the model can use mobile telephone banking - since in the poorest regions of Tibet, Yunnan and Sichuan, there are more than 50 counties without banking (Tobin, 2011). If the local open university courses are to succeed in producing job-providers rather than job-seekers, then some micro-credit will be wanted sooner or later. Micro-credit has always been designed for entrepreneurs to set up profit-making business to re-pay the money-lenders. Healthcare and education are long-term investments, and need more organization. Such organisation is built into the *Modern Open Learning* model. In Sri Lanka, the Open University of Sri Lanka offers basic lessons or guidance to farmers using basic

language and images (as of August 2011 this was still very basic ; see their 'work-in-progress' website http://wikieducator.org/Sri_Lanka/L3_Farmers/Open_University_of_Sri_Lanka ). The wikieducator website could usefully be translated into Chinese and also distributed in rural China. Indeed all open universities worldwide could collaborate here.

The *Modern Open Learning* model is ideally suited to developing a learning-village. A pilot project was started in 2005 in a village in rural southern China, reported by Ku (2011). This is summarized in CASE 4 below as a bridge from the earlier unsustainable interventionist method to a more caring listening approach. Although interventions were started in 2001, extreme poverty was reported in the village in 2006, with 20% of households being "forced to pay exorbitant interest on money they borrowed to buy food" (p.346) from outside providers. The villagers had initially been 'encouraged' to grow ginger on the mountainsides as a cash crop, which led to a local oversupply of ginger and fall in market prices. The project design did not involve the concept of market development which is key component in the *Modern Open Learning* model. It is important to use some communication technologies to find larger markets as a village gradually expands production. Another important aspect was that the university used local villagers as intermediaries in order to circumvent the local ethnic "language barriers and their unfamiliarity with the local community and its culture" (p.351). Using a local villager as the hub is another key component in the *Modern Open Learning* model. Whether one believes CASE 4 to be successful rural development rests on if the Fair Trade movement is viewed as a charity or simple non-exploitation.

CASE 4 : Case Study on Pingzhai Village in rural China

Case Study on Pingzhai Village in rural China

The Hong Kong Polytechnic University started this project as academic action research in 2001 to see if they could change an isolated village from being not-self supporting to one that is. The ancient village was naturally sustaining until modern lifestyles were imposed in the past fifty years. The modern lifestyles brought television and high electricity fees, education and high school fees, hospitals and high medical fees, modern agriculture and high fertiliser costs, and so on, with loss in self-supported livelihoods and a slide into debt and dependency. The first few years after 2001 did not result in sustainable development, and they began to feel helpless. The visiting university experts could not avoid listening to the sad experiences and desires of the villagers. After six months of intensive listening they learnt that ethnic crafts were a potential solution. Consequently a new ethnic craft-making project was started in 2005. This used local materials and indigenous craftsmanship, with the aim now to preserve local culture and identity. Elicitation by the university and then sharing of oral histories by the older villagers was the driving force to re-generate interest in the younger villagers, to re-claim identity and self-develop a sustainable profitable cottage-industry making local ethnic crafts.

All the essential components of the *Modern Open Learning* model can be discovered in CASE 4. There was a suitable university with local government funding to offer extension into the rural under-developed region. There was the historical imposed development similar to CASE 1 and CASE 2 which failed because there was no cloud capability to identify new markets when needed. And there was a clear turnaround when the university started listening to the wants of those affected in the village. There were key local people who could communicate as intermediaries between the target users and the outside resources. They all studied together and co-created the idea that village crafts were a realistic product. The cultural crafts had the potential to achieve not only economic development but also social renewal. This social renewal helped to unite the villagers and helped the younger generation regain their self-respect and cultural identity. The university did not give money or deliver things in an unsustainable way, but offered only listening and resources as support. They offered advice about markets and how to reach additional markets as the crafts project expanded. There was all the needed reporting : examples of other similar projects from the Yi ethnic group and Miao ethnic group were found by the university and shown to the villagers of this Zhuang ethnic group (Ku, 2011, p357). Through showing these examples, the villagers became keen to learn more about marketing and business models themselves for their own use - without being instructed to do so - this is what is termed *open lifelong learning*. The villagers now are skilled themselves in using ICTs and have their own website for their businesses. They in due course became keen and eager students of bookkeeping and accountancy for themselves. Even the purchasers of their goods became enthusiastic to study and learn more. The whole project has been reported to the stakeholders and to other villages as a model for further uptake (eg see http://english.cntv.cn/program/cultureexpress/20111209/108821.shtml). All the essential components of the *Modern Open Learning* model (FIGURE 3) are present and working well. Overall the project is self-sustaining.

## 5. CONCLUSION :

The Transactional Distance model is useful for understanding how to create and nurture the critical thinking lifelong learning skills. In the learning-village, the students need to consider the alternatives and the various strategies, and decide for themselves which path to try out. They make mistakes - but that is natural in learning. We shouldn't short-change them by telling them what to do and demeaning their learning opportunities - if and whether we do know best. In this way they develop mastery and learning skills which are sustainable. The users must be the owners of their own learning from the very beginning. Accordingly we should not march in with the right answers, but should offer learning opportunities that start from where they are, and gradually sensitively coach them to become experts of their own livelihoods and learning. The Transactional Distance model rationally explains how students can learn lifelong critical thinking skills - essentially through the collaborative Stage 3 of this four-stage model.

The Transactional Distance model is related and complementary to the *Modern Open Learning* model. The *Modern Open Learning* model gives the context within which the Transactional Distance model operates. For instance examples are needed in Stage 3 to be explored as available choices, and in the *Modern Open Learning* model these can be produced as video examples to show the students, created by the open university or created by other students. Together these two models show in a practical way how to bring about open learning for community development in rural regions. The basic premise is that we must move away from using ICT to control, regulate and administer teaching, towards the new paradigm of listening to the wants locally and offering the people examples and choices, and all the support they need. Support is created by an open university with input from student users, and local hubs draw down learning resources on demand to serve the interests of the users. These two models effectively and efficiently show how the learning-village can be nurtured sustainably.

In any region, we should beware of forming centres of excellence that become islands leaving the seas around them barren. Several new Education City projects are underway - in (Grenoble Innovation for Advanced New Technologies) Grenoble France, in (University Science Park) Cambridge England, in (Virtual Skolkovo) Moscow Russia, in (Education City) Qatar, in (Smart Schools Super Corridor) Kuala Lumpur Malaysia, in (Science City) Zurich Switzerland, in (Tsukuba Science City) Tokyo Japan, in (Digital Media City) Seoul South Korea, and so on. While these may serve as magnets of talent and transform ideas and knowledge into industries (maybe), there is a high risk of creating a new digital divide turning the towns and villages in between into a desert. The function of open learning is to complement these Education Cities through developing open learning societies throughout the world. Where these Education Cities consist of concrete, the *Open Learning* model consists of oxygen. The financial crisis of 2007 caused 11 million jobs to be lost worldwide (Coughlan, 2011). Simply building ICT companies will not likely create the new jobs needed : such ICT companies generally have fewer employees compared to similar sized traditional industries. A lifelong learning society involving all the people is what is needed. This paper has presented a *Modern Open Learning* model, to show how ICT can be used effectively in context to nurture local learning communities - where the aim is to develop individuals as job providers (to themselves and to others), not to mass-produce graduates who are job seekers.

"*We must re-boot our economies with a more intelligent type of growth*"
Jose Angel Gurria, OECD Secretary-General,
Global Forum on the Knowledge Economy, Paris, 12th-13th September 2011

The accompanying Presentation slides are available at
http://www.open-ed.net/library/rural-ed.ppt

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