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A STUDY ON THE IMPORTANCE OF FOSTERING TRUST IN A DISTANCE LEARNING COMMUNITY

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Abstract
This paper describes a study being conducted on a graduate level online distance education course at an African university. This document addresses a research to understand learners’ trust in relation to particular trust factors in her or his academic performance when studying at a distance.

In order to attain this goal a study, which accounts for both a quantitative and qualitative data collection was procedure.

Results gather therefore confirms the trust relevance when learning at a distance. This work also stresses the importance of fostering trust in a distance learning community and in improving trustful online distance learning environments.

Appended to that research is the development of an Information and Communication Technology online course was design, developed and deployed. As a consequence, today Universidade Jean Piaget de Cabo Verde students learn how to use a computer and the internet mainly at a distance.

This Information and Communication Technology online course had been applied since 2002 to every initial graduation year at Universidade Jean Piaget de Cabo Verde, in Cape Verde. This setting diminishes possible technological phobia and contributes towards the integration of the use of Information and Communication Technology in students’ daily lives. Thus a contribution to reducing the existing gap between developed and developing countries.

Keywords: Online distance Learning, Distance education, Trust, Performance, Information and Communication Technology online course.
1 Introduction

Contrary to early distance education, today's online tools allow communication processes much closer to face-to-face than their off-line counterparts. This characteristic can, sometimes, lead learners and teachers to expect online social rules and attitudes to be similar to face-to-face situations. Unfortunately, online communication lacks in a number of ways less obvious or indirect communication features, potentially misleading the parties involved to confusion, and frustration towards the virtual environment and their interlocutors (Wilson, 1996a).

In online distance learning, avoiding or diminishing the risks of confusion, misunderstanding and frustration in the communication process is crucial as this process is the only link connecting the student with her peers, teachers and education institution (Preece, 2000 and Ryder, 1996). On the other hand, online teachers usually adopt more open, decentralised and informal actions to lead the learner to their aims asking students to assume part of the traditional teacher role, creating their agenda and taking charge of their own learning whereas the teacher is expected to come forward with answers to the students’ requests (Wilson, 1996b).

This happens as general online distance education methodologies usually follow a learning methodology, which seeks to adapt to each learner’s needs and guide them towards the satisfaction of their needs and goals. These learning methodologies imply the engagement of learners and teachers’ co-operative actions, which rely on sound and reliable communication processes. Communication processes that are able to foster sound and trustful online distance learning processes lead to successful teaching and learning experiences. Thus, the belief underlying the empirical study about to be presented, is that students’ trust in the online distance learning process is the common denominator of several related problems leading to low academic performance, such as:

- Lack of motivation;
- Frustration; and
- Anxiety.

This is so as the above trust related problems might impair the student’s will to co-operate and engage in a distance learning environment thus affecting his or hers academic performance. It is our belief that trust plays a crucial role in the success of online distance learning, hence this effort to investigate the interaction of trust with online distance learning specially regarding academic performance. This paper begins by setting the context of the work herein depicted, presents the methodology and the results of an empirical study undertaken to foster the understanding of the effects of trust on academic performance in online distance learning and ends highlighting its main contributions.

1.1 Context

This paper addresses a study performed in Cape Verde at Universidade Jean Piaget de Cabo Verde whose main purpose to understand the interaction
between trust and performance in online distance learning. To find answers to
the above questions, an empirical study was conducted at graduation level
using an Information and Communication Technology online distance
learning course. The following paragraphs briefly introduces us to the research
context within which this work was carried out, a brief introduction will be
provided about Cape Verde, about the university and about the course taught at
a distance.

1.1.1 Cape Verde

*Cape Verde* has a population over 400.000. The majority of *Cape Verde*
population is young. The national language is Creole (Krioulo) and Portuguese
is the official language. *Cape Verde* is a Least Developed Country. The *Cape
Verde* economy is fragile because this country has few natural resources and
limited agricultural possibilities, which makes it heavily dependent on foreign
assistance and overseas resources. This country has very unfavourable
import/export rates as most of its resources are imported from neighboring
countries such as Senegal and the Canaries and from those who share a
common language such as Brazil and Portugal. Export figures are close to nil.
Nevertheless, *Cape Verde* has made a considerable effort to foster the
development of its educational sector. It has close to eighty per cent literacy
rate but no concrete plan to supply all schools with personal computers or
internet connections, one of the school problems' being its lack of technical
know-how on a number of fields related to the overall education process. Again,
in the higher education area, *Cape Verde* suffers from a lack of opportunity as
there are only seven higher education institutions including one of the newest,
*Universidade Jean Piaget de Cabo Verde*. *Cape Verde*'s lack of opportunity in
higher education implies that most students must go abroad in order to pursue
their education. Over 2000 Cape-verdeans are pursuing tertiary education
abroad, primarily in Brazil and Portugal and an estimated 1500 study in *Cape
Verde*.

*Cape Verde*'s information and communication development started relatively
late. The country's mass media is underdeveloped, although *Cape Verdean*
exposure to mass media is considerable. Internet facilities are still in expansion
in *Cape Verde* and unfortunately there is only one Internet Service Provider
(ISP) and limited but costly broad band access. This obviously results in a very
low Internet usage penetration rate although information and communication
technologies have a considerable potential in this archipelago country in the
education, government and health sectors. The Internet could definitely play a
key role in providing greater education opportunities to all but *Cape Verde* still
needs to make a big effort to push itself into the information society alone, not to
mention the knowledge society.

1.1.2 The University

Within this general context, *Universidade Jean Piaget de Cabo Verde* is located
in Praia. Praia is the capital city of *Cape Verde* and is situated in Santiago
Island. *Universidade Jean Piaget de Cabo Verde* is one of *Instituto Piaget's*
higher education institutions, which are spread over Mozambique, Angola, *Cape
Verde* and Portugal. From its start, the university was willing to integrate this
community into a broader community, the *Instituto Piaget* community.
Therefore, invested on the development of a distance education program to
cater for the needs of its students and teachers. This included the development
of a **Information and Communication Technology online** course as its first
undergraduate online course to foster students’ self-sustained distance learning
and ICT skills. This course forms a part of every *Universidade Jean Piaget de
Cabo Verde* first year curricula and has been implemented since 2002.

**Information and Communication Technology online course**

The **Information and Communication Technology online** course, taught at a
distance, is a first year subject attended by every under-graduate student at the
university. Its main goal is to foster students’ interest and know-how in the day-
to-day use of the Information and Communication Technology throughout their
course and lives.

Although referred to as *taught at a distance*, the **ICT online** course has two face
to face moments, one in the beginning of the programme and another one at its
end. The main paradigm of use at the university is based on self-study, through
which learning objects support a pre-determined learning purpose. Special
attention was also given to both individual and environment discriminative
attributes as mentioned above. The instructional design is based on goal-
oriented learning activities in which students are requested to perform specific
weekly tasks. This includes a text-based content with exercises, multimedia
illustrations, interactive graphics, and assessed feedback. Asynchronous and
synchronous online discussions are also facilitated every two weeks.

A very detailed student guide and learning strategy help line is available for both
students and teachers. Each aspect of learning content is hierarchically
organised, content written in small chunks to enable a better compression and a
printable version made available. Moreover, collaboration opportunities are
made available through the teaching and learning strategy. As the majority of
students had no access to the Internet or computer facilities two computer
laboratories together with a help desk facilities were available for students. This
common space in which the **ICT online** course took place provided
opportunities to collaboration among the students. Such opportunities specially
occurred when students’ worked on their skills content part of the **Information
and Communication Technology online** course.

In the end, this instructional design strategy aimed to guide students throughout
their course and simultaneously respect their learning styles, needs and
opportunities.

The **ICT online** course was implemented during the second semester of
2002/2003 and involved close to a hundred students. The pass rate was over
90% with grades presenting a normal pattern consistent with other courses and
courses. Eventually in spite of stressful moments that occurred together with
technical infrastructure difficulties, students' performance improved with time as
they became more and more used to studying online. At that time as most
students did not have access to a personal computer at home the computers
were heavily used. Also, date access rated provided by the Learning
Management System showed that students continued to use the **Information
and Communication Technology online** course six months after it finished. At
the end of the course, research indicators revealed that students generally
accepted learning online and the majority stated that would not mind attending
an online course again, in spite of being used to teacher centered classes in which they sit passively waiting for the lecturer to transfer her or his knowledge.

Today, the university is extending the number of library computers due to demand and the impact of the ICT online course on the way students perceive and use computers and the Internet. At this time the university provides an average of ten persons per computer. The university also has integrated new distance education rules and regulations and new online distance learning measures. Two more online distance learning Information and Comunication Technology online courses with similar characteristics are being implemented. This are included in all first year course curricula and involves Portuguese and English contents. The Universidade Jean Piaget de Cabo Verde has also been recognised by the Instituto Piaget community and Cape Verde community as a distance education provider. It works in collaboration with both communities on the development and implementation of distance learning initiatives.

Further it will be presented the research strategy implemented to understand the effects of trust on academic performance in online distance learning.

1.2 Research questions and strategy
A multi-method approach was used to attain these empirical research aims by triangulation of the findings from each approach. Two distinct research stages where developed:

Stage one was designed to identify the main trust factors. Main trust factors that, according with the under-graduated students at Universidade Jean Piaget de Cabo Verde, are relevant in online distance learning.

Stage two goal is the characterisation of the relation between trust and performance in online distance learning.

Adding detail to the overall research methodology in Figure 1 diagram presented provides a more detailed overview.

Figure 1 - Overall research methodology diagram
1.2.1 Stage one

This research stage was designed to identify the main trust factors. In order to achieve this goal a survey was conducted followed by a factorial data analysis. The survey’s questionnaire included a total of eighty-five questions (A translated copy of the survey is available in appendix). of which:

- Twenty-two questions covered the students' demographic data as well as their skills in information and communication technology. Those twenty-two questions aimed to provide an initial student profile at Universidade Jean Piaget de Cabo Verde.
- Sixty-three related to the influence of trust in online distance learning. These questions resulted of six clusters of approximately ten (10) sentences for each one in the six initial draft trust factors.

Figure 2 provides a diagram that provides an overall view the survey’s procedure.

![Figure 2 - Stage one research methodology elements](image)

Results gathered from this first stage contributed to the design of the second research stage. Please refer to Sousa (2003) for a presentation of the design and results of this first stage.

1.2.2 Stage Two

As depicted before in Figure 1, the second research stage was designed to:

- Explore the relation between trust and performance \ie test the hypotheses that trust and performance are related in online distance learning; and in parallel to
- Assess the students' trust specific appreciation of the virtual learning environment provided by Universidade Jean Piaget de Cabo Verde. Providing an additional insight on the use of the Information and Communication Technology online course to explore the relation between trust and performance.

As schematically presented in Figure 3, this second research stage used non-interventionist multi-methodological approach.
Figure 3 - Stage two research methodology elements

A quantitative approach caters for testing the hypotheses that trust and performance are related in online distance learning whereas a qualitative approach deals with a parallel assessment of the students' appreciation of trust specific aspects of the virtual learning environment. The qualitative approach looks into the relation between trust and performance from two observation conditions:

- Studying the relation between students' trust and their academic performance as gathered from the students' summative assessments results on the ICT online course; and
- Studying the relation between students' trust and their performance, using the results of students' academic added values looking into the variation of the students' trust and academic performance as measured at the beginning and end of the ICT online course.

The quantitative approach data was gathered in three different moments in time whereas the qualitative approach data was collected throughout the entire lapse of time:

First moment — The first quantitative data collection moment occurred before the start of the ICT online course. At this time, four questionnaires were applied to gather data on the students' initial:

- Self trust beliefs (questionnaire [Q1]);
- Self information and communication technology expertise (questionnaire [Q2]);
- Theoretical ICT knowledge (questionnaire [Q3]); and
- Practical ICT knowledge (questionnaire [Q4]).

Second moment — This second quantitative data collection moment was accomplished during the course of the online course. Two questionnaires where used to:
• Assess the students' theoretical ICT knowledge after attending the equivalent of eight hours of theoretical ICT content lessons (questionnaire [Q5]); and
• Assess the students' practical ICT knowledge after attending the equivalent of eight hours of practical ICT content lessons (questionnaire [Q6]).

Third moment — This third and last quantitative data collection moment took place at the end of the ICT online course. A last questionnaire (questionnaire [Q7]) was applied to gather data on the students' trust beliefs after completing the ICT online course.

Throughout the entire lapse of time — Data related to the ICT online course usage appreciation was collected in observation diaries throughout the duration of the course. This qualitative data gathering was later complemented with 35 additional interviews conducted in the course end.

The online course ran for fifteen weeks (An academic semester last for fifteen weeks in Universidade Jean Piaget de Cabo Verde).

2 Conclusions

One major result of this research study is the confirmation that trust is a key issue in online distance learning environments as shown by the results of the first stage of this study which highlighted three main trust factors:

Factor 1 - Students' trust towards the interaction between students and teachers;
Factor 2 - Students' trust towards the virtual learning environment; and
Factor 3 - Students' trust towards technology.

The same data collection tool - a questionnaire - used on the survey conducted as part of the first stage of this study also fostered the understanding of trust:

• Across the main three factors identified;
• Across age and gender;
• Among subjects' computer ownership condition;
• Across internet access condition; and
• Across previous experience in distance education and information, and communication technology knowledge and skills.
• Please refer to Sousa (2003) for more information results of this first stage.

Second stage results indicate a correlation between the students' trust and their academic performance although those correlation's were indirect in both observation conditions.

• Results from the first approaches show a negative correlation between trust marks of all three trust factors and the academic performance of the students; as well as
Results achieved from the second approach, show a negative correlation between trust and students' academic performance over factors two and three. According to the above results, students with an initial high level of trust will probably achieve worse academic performance. Especially those students, who according to the second research approach, rank higher on trust towards virtual learning environment and trust towards technology. Those students will probably achieve worse academic results when compared to their colleagues, who rank lower on trust towards virtual learning environments and trust towards technology. As stranger it might seems maybe, within an online distance leaning environment, less trustworthy students are expected to produce better performance. Or maybe when the trust is too high, the unexpected difficulties introduced by the environment produce a global failure of performance (Castelfranchi, 2004)

Finally, a third approach — this one qualitative — showed that the majority of the students considered attending the ICT online course a good experience. Generally students displayed motivation towards learning online although there were moments in time where students manifested anxiety and frustration, especially when a technical failure occurred near a summative assessment activity date or deadline.

Those changes occurred during specific course contents and during specific moments in time, like near a technical failure, or during lack of teacher and student communication periods, especially if those occurred near an assessment period. Here the majority of students agreed that trust represents a key factor in an online distance learning environment. Also, most students agreed that in online relationships, a face-to-face opportunity could help foster trust.

Results addressed above show us the need for the understand of trust and it degree and influence on students' performance within and online distance learning process is more difficult as it seams. In this case time, space and technology within the online distance learning process can influence student's trust beliefs and therefore influence their motivation and will to co-operate. To understand people's trust we also need to understand their surround environment, as people's trust belief and its fluctuation depends also of their social context (Gameta, 1998). The answer for a successful online distance learning design should remain in providing the adequate level of trust needed to,

- maintain students' motivation towards their learning;
- help them dealing with their punctual frustrations;
- provide student's feelings of safeness and acceptance within their learning community group; and
- be able to engage in a mutual dialogue with their teacher and colleagues.

This lead us to conclude that today, distance education pedagogues should integrated a trustful virtual learning environments, special those who concern with the constructivist education models. As for a virtual learning environment to prosper within those network technologies, learners must be willing to use the learning resources and to engage in a online interaction with their teacher or
colleagues in a order to support their own learning. In an online context users hardly make eye and gestural contact with their partners. Such online distance communication if not well cared for, implies a lack of dimensions of: character, personality, nature of the relationship, institutional values, familiarity, sharing of system values, gender, age, role, social status, occupation or body language... those which we normally rely on to form attitudes or base decisions of trust.

New trust sights and new legal and social rules are necessary for building trust in the information communication technology societies. And more research need to be conducted to validate the relationship between users' online trust experienced feelings and beliefs, especially within online distance learning networks. Those results reinforce complexity and dynamism of trust relations. As well as the presenting empirical work results in this document serves as a reminder of the importance of trust in online distance learning environments and highlights the need to keep on studying the trust influence within it process.

It also illustrates that even with a minimal technological conditions is possible to ensure a successful online distance learning environment. It indicates that is reliable implement information and technology communication online distance learning self-sustain course in a developing country. Although within it minimal conditions have to be established and does not always concerns the technological conditions, but also concerns the institution, teacher and students willing to teach and learn at a distance.

3 Bibliography


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TEACHER UPGRADING THROUGH DISTANCE EDUCATION IN A SOUTH AFRICAN CONTEXT

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ABSTRACT

In 1994, after the dismantling of Apartheid in South Africa, there were more than 85,000 teachers in the system who had no tertiary qualifications or were inadequately qualified. Most of these teachers lived in rural areas, and had no access to tertiary institutions. This situation required a unique approach to overcome the problems specific to the demographic and socio-economic circumstances of the country.

The North-West University in South Africa took up the challenge and became involved in the huge task of upgrading the qualifications of these teachers by implementing a distance education programme. A flexi programme has been implemented by the establishment of thirty-two learning centres in locations throughout the country, which are accessible to these students. Full time lecturers and trained part time facilitators offer contact classes twice a month. Vacation schools provide additional learning opportunities. The recruitment and enrolment of students, distribution of study material and other administrative duties are supplied by supporting companies.

Quality control for all these programmes is ensured by benchmarking against the programmes presented on the main campus i.e. B.Ed Hons., ACE and NPDE. Currently more than 17 000 teachers are enrolled in modules presented in the flexi mode and a passing rate of more than 70% attests to the success of the programme.

Key words:
Teacher; upgrading; distance; education; South Africa;
1. The dilemma of education in South Africa before 1994

During the years of apartheid, very few black or coloured teachers had the opportunity to attend tertiary institutions. Often teachers who had barely completed their own secondary education were teaching maths and science to Gr. 12’s. In 1994, after the dismantling of apartheid the full extent of the problem became apparent and the Department of Education was left with the following dilemma: more than 85,000 teachers in the system had no tertiary qualifications or were inadequately qualified. The legacy of under- and un-qualified educators, with the lack of competencies in key learning areas, continued to undermine the teaching environment and conditions of service of educators, especially in rural areas. Educators and communities alike were demoralized. Teachers were not being properly remunerated because of their lack of qualifications and parents were becoming more concerned about the poor standard of education in schools.

In 2003 Mr Nelson Mandela expressed his concern about the standard of education in South Africa:

“There is much work still to be done before our nation and our people achieve the education system that they aspire to and that they deserve”

10th anniversary Gala dinner speech CEPD 2003

2. The achievement gap increases

The reasons behind the widening achievement gap between previously advantaged and disadvantaged learners were multi-faceted. With the vast growing black population there was a pressing need for more qualified teachers. To fill this need, even more unqualified black teachers where appointed at schools with the understanding that these teachers should continue with their professional development by doing in-training courses. This situation, aggravated by poor socio-economic reasons resulted in the very low standard of education for these unfortunate learners. Disheartened learners often quit school prematurely and entered the labour force, earning meagre salaries. Very few learners completed Grade 12.

3. Factors hampering training of unqualified teachers

Because of long distances and lack of funding, these teachers found it very difficult to attend tertiary institutions and time was running out for the thousands of learners craving for better standards of education in public schools. Most of these teachers lived in rural areas, and had no access to tertiary institutions. Thus the children who were to benefit from the newly established democracy were still disadvantaged as far as their education was concerned.
The situation was no different in the North West Province. Like other tertiary institutions, the North West University (then known as the Potchefstroom University for Christian Higher Education) could accommodate only a small number of students on campus. At that stage prospective teachers completed a teacher’s Diploma through the old Potchefstroom Teacher’s Training College, which only catered for full-time students. The College did not have the resources to accommodate those thousands of teachers, who were in desperate need of further training.

The Department of Education was faced with huge challenges, which included the need to provide pre-, and in-service education competencies, geared for and adapted to rural contexts. There was a growing gap between the demand for, and the provision of, qualified educators and the demand was growing fast.

4. The North West University rises to the challenge

After the Northwest University (NWU) identified the problem situation the Faculty of Education Sciences took up the challenge and became involved in the huge task of upgrading the qualifications of these teachers by implementing a distance education programme – aimed at previously disadvantaged teachers. Part of this challenge was to rapidly deliver the training to a large number of teachers with varied levels of previous education and training, and still base this training upon accredited and recognized training systems.

At first on-campus lecturers themselves facilitated the respective programmes. The rural areas in and around the Potchefstroom campus seemed the most obvious starting place for this model of distance education aimed specifically at previously disadvantaged teachers. In 1998 it became clear that the programme should be made available to those thousands of other desperate teachers in a similar situation all over South Africa. Programmes were expanded and implemented by establishing thirty-two learning centres in locations throughout the country, which are accessible to these students.

5. The unique situation required a more specialised approach

Student numbers increased rapidly: Word about this programme soon reached the many under-qualified teachers throughout South Africa, who were in dire need of professional development. Although many private students enrolled for this model through the NWU, The National Education Department also showed commitment to the improvement of education by awarding bursaries to students to enable them to enrol for the National Professional Diploma and improve their qualifications.

The faculty soon realized that the needs of these prospective students were very different from those students who were studying education full time at Universities and Colleges. As most of these teachers had little or no experience...
of tertiary studies, they needed more help more often. Many of these teachers did not have the means to enrol for full time studies at a tertiary institution and since these teachers were employed, full time study was not an option. The need for a more flexible program to provide in the students’ educational needs became evident.

6. Full time lecturers were appointed for the distance education programme

As the number of students for these programmes grew, the need arose to appoint staff/lecturers who would be responsible for distance education exclusively. Full time lecturers were appointed in 2004 to run the off-campus programmes of this university. These lecturers were assigned to plan, coordinate and deliver the programme and are also responsible for the development of relevant study material and quality control. A flexible program was designed to provide in the educational needs of these teachers, where students could study in their own time within the stipulated time frame, but could still rely on assistance from academic staff whenever necessary.

Quality control for all these programmes is ensured by bench marking against the programmes presented on the main campus i.e. B.Ed Hons., Advanced Certificate in Education (ACE) and National Professional Diploma in Education NPDE).

Programmes offered:

RPL: recognition of prior learning: As students are employed and have relevant previous experience of the teaching profession, they start by compiling a portfolio as evidence of all prior learning. Should this portfolio provide the necessary proof of teaching skills and professional knowledge, it qualifies the students to progress to the first year of NPDE (NQF level 4)

<table>
<thead>
<tr>
<th>Programme</th>
<th>Duration</th>
</tr>
</thead>
<tbody>
<tr>
<td>National Professional Diploma in Education</td>
<td>4 years</td>
</tr>
<tr>
<td>Advanced Certificate in Education</td>
<td>2 years</td>
</tr>
<tr>
<td>B.Ed.Hons</td>
<td>3 years</td>
</tr>
</tbody>
</table>
7. **Extending programme to rest of the country**

At first only six centres within North West Province were established where the programme would be facilitated. So-called “off-campus” lecturers would then go out to these centres on Fridays and Saturdays and sometimes also during the week to facilitate the programmes at the different centres. They assist students in the different modules of the respective programmes by explaining assignments and helping students with academic problems they might have encountered.
The National Department of Education saw the programme as an ideal way to implement new policy on education and the demand for this type of education grew rapidly. It was deemed necessary to open another 26 centres throughout South Africa during 2004 (see diagram1). At each of these centres a coordinator was appointed as well as between 9 and 12 qualified facilitators who would assist with the facilitation of the respective modules. Many of these centres are situated in far off rural areas, which were selected according to the density of the student population. As 95% of the students are previously disadvantaged and mostly live and work in these rural areas, they could now attend contact sessions at centres nearest to them where modules are facilitated twice a month. Students now also had much easier access to additional resources provided at each centre. Vacation schools facilitated at each centre provide additional learning opportunities.

This programme also proved a convenient way for private students employed in teachers’ post or working as teachers’ assistants, to attain an approved qualification. South African students currently working abroad, also find the programme very accommodating. Through electronic mail and tele-conferences, they are assisted with problems they may encounter.

8. Roles of co-ordinators and facilitators at each centre

- Co-ordinators or centre managers ensure the effectiveness of contact sessions at each centre. They manage the centre’s facilities, timetables and administration. Co-ordinators report back to the designed person at NWU.
- Facilitators with appropriate qualifications are assigned to facilitate the relevant modules and to give the necessary support to students. It has been found that continuous support and communication is of vital importance. Facilitators are trained and assisted by NWU lecturers responsible for the particular modules. They also receive tutorial letters four times a year from the lecturers regarding academic information, which should be passed on to the students.
9. **The model today:**

Currently this university is the 2nd largest institution involved with training of teachers in South Africa as there are between 17 000 and 18 000 students enrolled in this distance education programme of the university.
10. Resource centres and providing facilities for E-learning

In order to make study material more accessible, a resource centre has been established at each of the centres where material, needed by the students to do the necessary research for assignments, is kept.

Because of the continuing upgrading and revision of study material, the faculty had to think of a better way to keep students informed on a regular basis. E-learning seemed the most likely solution to the problem, but most students had never been introduced to any modern means of communication and did not have access to computers in the area where they work or stay. The faculty is currently in the process of providing each centre with the necessary Internet and e-mail facilities to enable students in the rural areas to have access to the library facilities of the NWU. Consequently communication between students, facilitators and lecturers has become much easier via e-mail. As the course also includes a computer-training course, this step was an absolute necessity.

Digital Book Discs (DBD’s) with academic information of each module are available at each centre to enable the student to watch lectures should he/she not be able to attend a contact session. Additional resources like video clips (concerning the respective modules) can also be downloaded at the various centres. By implementing this project we anticipate a much higher passing rate amongst our students. The coordinators and facilitators are also trained on how to help students to use these facilities at each centre.

11. The role of supporting companies

Because of the huge number of students, supporting companies assist with recruitment and enrolment of students, distribution of study material and other administrative duties.

12. Critical evaluation: Successes and possible room for improvement

- Successes

During the last 10 years thousands of teachers have acquired their teaching qualifications through the distance education programme of this university. Currently more than 15 000 teachers are enrolled for this distance education model and a passing rate of more than 70% attests to the success of the programme.

The programme is very popular and successful amongst teachers who want to complete or further their qualifications. It enables them to interact with qualified staff regarding their specific academic programmes at any of the different sites without having to travel long distances or take unnecessary study leave, which would disrupt their learners. The very fact that various Provincial Education Departments have allocated contracts to the NWU for the training of
teachers at this institution through distance education illustrates the urgent need for this model.

- **Room for improvement**
  - As most of the students are from previously disadvantaged groups, they often do not possess effective study methods and technological skills. Courses to train students in these skills are currently being designed.
  - Study material is being revised to make all content more user-friendly.

13. **Our vision**

   The constitution of South Africa ensures the right of all children to quality education. This implies that every child deserves competent and qualified teachers. Access to high quality schooling is regarded as the cornerstone of a democratic society, which aims to give all citizens a fair start in life and consequently equal opportunities as adults. The NWU is of the opinion that if we provide teachers with this opportunity of quality professional development, their learners will receive quality education. This will result in better qualified citizens, who can eventually contribute to the uplifting of the economy and ensure a better future for all the citizens of the country.

   Nelson Mandela, stressed that policy without action will not lead to the attainment of set goals regarding education:

   “...it is no longer sufficient to say that the doors of learning and of culture would be opened and education would be free, compulsory and equal for all children. We now had to be specific about how we were going to achieve those goals.”

   The education system has yet a long road to total freedom but the NWU believes this model is a big step in the right direction.

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AN INVESTIGATION INTO DELIVERY OF ON-LINE COURSES WITHIN AN EARLY CHILDHOOD TEACHER EDUCATION DISTANCE PROGRAMME IN NEW ZEALAND

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Abstract

Successive New Zealand governments have acknowledged research on the long term importance of Early Childhood Education. In April 2005 the government launched Foundations of Discovery. This initiative, to boost Information Communication Technology within the early childhood sector came with funding of $NZ16 million. A preliminary investigation into the delivery of online teacher education in the early childhood sector commenced. The purpose of the study was to give an initial indication on the students’ access to computers with Internet connection and computer skill level. The student knowledge of online facilities and the support available through their distance teacher education provider were also examined. Students were asked if given the choice of distance print-based or on-line delivery which would prefer.

Results indicated that students had a range of skills and confidence when using computers. These did not fall into any specific age brackets. Equity, flexibility and the necessity of student support were highlighted. Throughout the study these points were given as the main reasons for successful completion of distance online learning courses. The implications were that the delivery of online early childhood teacher education appears to correlate with those in the mixed mode delivered programme.

New Zealand is an open agrarian economy, that could be described as a successful underdeveloped nation, the acknowledgement of early childhood education and the willingness to invest in this part of the education sector may have value to other countries on a similar path.

Keywords: Flexibility; Equity; Teacher Education; On-line
1 Introduction

This preliminary investigation into the delivery of online teacher education in the early childhood sector is the first step in an ongoing project. The purpose of the study was to give an initial indication on the students' access to computers with Internet connection, computer skill level and knowledge of online facilities of their distance teacher education provider and student support. The paper is structured as follows. The first part provides background information relating to the research and its context. This is followed by a description of the methodology used in this quantitative research with data gathered via a set of questions sent out as a questionnaire (Jenkins, 1999). The questionnaire was sent to students enrolled in a distance mixed mode delivered early childhood teacher education programme. At present the mixed mode delivery does not include an online course.

Finally findings are presented. The results indicated that students have a range of skills and confidence when using computers. The investigation also highlighted equity, flexibility and the necessity for student support. The above implications for delivery of distance online early childhood teacher education appear to correlate with those in the distance mixed mode delivered programme. Throughout the literature examined, with regard to this investigation, these points were given as the main reasons for successful completion of distance online learning courses. (Gaide, 2004)

2 Background

In general, research on the use of online distance delivered teacher education in the early childhood sector is sparse. The preparation for the investigation was obtained by examining literature that included the delivery of distance online academic courses as well as the delivery of online teacher education courses. The literature included reasons why students are looking at distance teacher education online, the skills brought to the courses, skills needed and how best to increase these skills and enhance the support.

As a result of the full literature review a further questionnaire was sent out to students. The data from the questions will be used for further research within the institution and early childhood teacher education. The results form a basis for the introduction of online courses into the early childhood teacher education programme. Either by a flexible delivery or blended learning mode having examined fully the issue of equity, skill level and how to support online courses not only from a students point of view but also from the academic and administrative staff’s view. (Donaghy & McGee, 2003)

The definition of flexible delivery and blended learning by the distance provider in this study is as follows. Flexible delivery is the provision of learning experiences through a range of delivery mechanisms and media, including but not exclusively, print, online, class-contact and audio. Blended learning is the experience of learning by means of appropriately selected blends of delivery and support media, including but not exclusively, print, audio, online and contact classes. (The Open Polytechnic of New Zealand, 2005)
The opportunity for flexible learning is an approach for providing educational opportunities that focus on the differing needs and circumstances of students as well as offering the potential for enhanced learning and teaching strategies. (New Zealand Teachers’ Council, 2002)

Educational applications of new technology have been progressively introduced in many parts of the world, including Aotearoa/New Zealand, over the past three decades (Scheer & Lockee, 2003). These include multi-media delivery of educational material by CD-Rom, pedagogical uses of email, all the way up to structured Web delivered distance learning. Internet delivery is increasing whether it is providing support within a traditional face-to-face classroom, lecture notes or readings on the web, to delivery of entire courses and programmes.

Early childhood teachers require knowledge, skill and confidence regarding Information Communication Technology (ICT). (Berthelsen, Halliwell, Peacock, Burke & Ryan, 2000). Aotearoa/New Zealand’s Education Minister highlighted the above when he launched ‘Foundations for Discovery’ (Ministry of Education, 2005) which is aimed at strengthening the ICT education delivered in early childhood centres throughout the country. These needs should be addressed during pre-service training, allowing graduate teachers to feel comfortable with using emergent forms of technologies effectively in their teaching practices (Hope, 2004). The skill also enables teachers to keep abreast of current knowledge and to solve problems through access to a diverse range of national and international information.

Whilst online learning appeals to almost all students due to the flexibility and convenience it offers, not all students are suited to online learning. Completing an online course requires a lot of self-discipline and initiative. These attributes are also known to be essential for successful distance education. (Kearsley, 2002)

Research has been mainly focused on student achievement there is very little published research on the skills learners bring to online delivered courses. Kemp, Morrison, & Ross (1998) discuss learners’ pre-existing skills and characteristics, as well as their attitudes toward modes of instruction and describe how these can impact learner success within an instructional programme.

Online education has greatly increased the educational options available to busy early childhood educators who might be unable to pursue their academic goals in a traditional academic setting because of work and family commitments. (Brabazon, 2002). The flexibility and assumed freedom allowed through distance online learning require increased responsibility on the part of the adult learner to meet deadlines and stay on top of assignments without face-to-face interaction.

Along with the flexibility of online learning one could argue that the system is more equitable as there are no fixed times for study, and that study materials are available to everyone and at anytime. This assumes, however, that everyone who wishes to enrol has access to a computer and an online
connection. By providing the choice of distance online learning within a programme students learning opportunities increase greatly.

Mason & Weller (2001), have shown through their research that students gain confidence and competency if they have an introduction to basic computer skills, applications using the Internet and group working. By group working they are referring to asynchronous discussions, which students can access at anytime. This is supported by Gaide (2004) who lists student orientation as second in a list of ten best practices for helping students complete online degree programmes. Falvo and Solloway (2004) also recommend a face-to-face initial meeting, if possible, to help familiarise students. Student support is pointed out to be a factor determining quality in distance education (Nicols, Fertich & Jacoby, 1998, Scheer & Locke, 2003). Hara & Kling’s (2003) study highlighted the need for technical support to avoid student and lecturer frustration.

3 Methodology

The quantitative approach to research used in this study provided a collection of data to represent the student body on a teacher education programme. The questionnaire was the sole instrument for this investigation. The replies were treated anonymously.

All two hundred and seventy students enrolled in the programme were sent a questionnaire via the postal service. Eighty students returned the questionnaires. No reminder or follow-up was undertaken to gain further replies. The questions asked included: access to computer, access to Internet, computer skills and student support relating to the On-line Campus site provided by the tertiary institution. The data from the questionnaires were analysed for patterns of response and emergent themes by using bar and pie graphs. The voices of the respondents have been included in the analysis and discussion section of the report.

All the participants were enrolled in the Diploma of Teaching (Early Childhood Education) programme. The programme is delivered by mixed mode (print-based, face-to-face workshops and teaching practice) distance tertiary education provider. The average profile of a student enrolled in this programme is female, 33 years of age, generally working as an untrained staff member in an early childhood centre, with family commitments. Many are second-chance students with little or no experience of undergraduate education.
4 Results

The limitations of this study are reflected in the results. Further research is recommended within this teacher education programme reflecting some of the aspects, which were evident in the literature reviewed.

Figure I. Total Responses received

Computer access and Internet Connection

As can be seen in the graph above of the eighty responses seventy nine answered yes to having access to a computer and seventy two had Internet connection, the times of access varied as shown in the graph below.

Out of the seventy two respondents who indicated Internet access one reply indicated although they had access they did not use it; one had access at work only and did not indicate for how long they had access; three did not indicate where they had access or for how long; one had access at home but did not indicate the hours available and one indicated four hours access but did not specify whether the access was at home or work.

Figure II. Access Hours available
Three respondents pointed out that they had limited access because of the plan they had with the Internet service provider. One replied whilst having a computer and Internet access ongoing technical problems allowed only intermittent use. Only one out of the eighty responses circled ‘no’ to question number one regarding access to a computer and therefore did not complete the rest of the questionnaire.

**Figure III. Equipment and network access**

**Student Support**

Sixty respondents indicated that a workshop to assist in the use of and how to use the Online Campus provided by the Institution would support their use of the facility. Forty Four respondents had accessed the Online Campus site mainly to use the library facility, five had sent in assignments online. Sixteen of the respondents made comments that they found the site hard to access and several commented that they did not have the time to ‘play around’.

**5 Analysis & Discussion**

Taking part in an online course requires a basic understanding of computers, including applications like word processing, as well as how the Internet works. The analysis of this study shows that out of the eighty replies seventy nine students have computer access and of those seventy two have Internet access. Based on the eighty replies these figures indicate equitable access to a computer and Internet connection. However, some respondents pointed out that they have limited access because of accessibility to Internet connection being controlled by the plan they have signed with their Internet provider or because of difficulties in rural areas.

“limited to 10 hours per month on the internet plan”
“tricky out here in rural area with dial-up connection – don’t want to tie up the share line for hours”

Sixteen respondents stated that they found the On-line Campus site too difficult. If students only have a basic level of computer literacy and are not
comfortable using computers, online courses will not be enjoyable and more than likely become a source of frustration.

“The thought of online use is appealing but my lack of computer skills is off-putting.”
“Used it once – took to long to load then couldn’t find what I wanted”

A great deal of research has looked at the level of student support involved in quality delivered successful online courses (Nicols, Fertich & Jacoby, 1998; Falvo & Solloway, 2004; Gaide, 2004). One respondent commented, “find it difficult to get around would like specific help”

Ideally, technical support should be provided by a central, institution wide helpdesk open seven days a week for extended hours to address general hardware and software problems. Problems specific to individual course content would need to be handled by an academic member of staff. Hara & Kling (2003) state technical support throughout the course is also seen as essential for both students, academic and administrative staff. One respondent’s reply included “It would be great to have the library open during the weekend as a lot of students work during the week and do their study at the weekend. If you have a question you have to wait till the library opens on Monday.”

Provision of an introductory course or an initial meeting is highly recommended at the beginning of an online course between the students and the lecturers. (Mason & Weller, 2001). Sixty respondents identified that they would find a workshop, which, included some online training useful. “I feel that an Online Workshop would be a good thing ....” “Yes, I think some hands-on ‘stuff ’ at a workshop would be really helpful in getting some of us who are not so computer literate into the On-Line Campus” Several of the respondents mentioned that they had been given some guidance at the Introductory Workshop ( a compulsory component of the programme) held at the beginning of the teacher education programme. “ At my introductory workshop we had Donald from the library speak to us about how to get the best out of online enquiries, it was a most enjoyable and informative discussion and encouraged me to use online campus”.

For those students who have access to a computer and the Internet, have self-discipline, study skills and are comfortable using computers online course are desirable. “The On-Line Campus is very easy to understand and the steps are easy to follow”. These results imply that while basic computer skills are fairly common, intermediate to advanced skills are not.

Rovai (2002) states that the physical separation of students in programmes offered at a distance may also contribute to higher dropout rates. Providing courses online with asynchronous forums can help alleviate this by providing collegiality and a vehicle for collaboration between students. Research provides evidence that strong feelings of community may not only increase persistence in courses, but may also increase the flow of information among all learners. (Wellman, 1999) By introducing online courses as part of
the flexible delivery offered by the provider in this study students can have an increase in contact with other students, if they wish.

6 Discussion & Conclusions

Tait (2000) argues that the whole process of devising a distance education programme should start with identifying who the students are and identifying their needs. Distance education and computer assisted instruction currently affect only a small proportion of students in teacher training programmes in Aotearoa/New Zealand.

Technology adoption in education is often driven by factors and agendas only remotely connected to the needs of the learners. These factors can include commercial interest, organisational politics, administrative cost reduction priorities, a need to increase enrolment, reaching large geographic areas and other non-pedagogical imperatives. (Liberman, 2002). Hanna (1998) reported that traditional non-profit universities were being pressured by competitive market forces into providing Internet-delivered or supported courses.

The Aotearoa/New Zealand government is looking at the delivery of initial teacher education programmes and the providers of these programmes. Tertiary educators are being required to upskill their own qualifications, as well as being asked to teach to more rigorous standards. When this demand meets increased access to computers in homes, it seems clear that distance online learning for teacher education is a way of the future.

If student characteristics, computer skills, and attitudes toward distance education at an institution are tracked over time, faculty and instructional designers can use the data when designing their courses, thereby supporting more effective and efficient instruction as well as more satisfied and successful students. Knowing students' attitudes and skills may allow course developers to address issues of frustration and non-completion rates.

As a result of research completed on online course delivery there is substantial information on the skills and support required for students to complete online courses successfully. By drawing on this literature and building on the flexibility already provided by delivering courses via distance, online courses can be offered as a part of the early childhood teacher education programme. The programme will begin by introducing courses one at a time and giving print based alternatives. This allows for mechanisms to be put in place to ensure equity and quality support for students and staff. This view is sustained by the enhanced capacity for efficient and widespread use of distance education through advanced electronic delivery systems. (Harris, 1999).

To avoid early childhood teacher graduates entering the workforce and finding themselves working in contexts of which they have limited experience tertiary teacher education institutions have a responsibility to provide the necessary knowledge and skills that reflect the world of Information Communication Technology (ICT). Additional government funding specifically
targeted at the early childhood education sector and training early childhood teachers in ICT is an indication of the way of the future.

By looking at the social constructivism approach emphasised by Vygotsky online courses would seem to suggest the relevance of self- and peer-assessment at least in conjunction with, if not replacing objectivist, reference based forms of assessment. Such changes obviously also imply a changing role for academic staff. As we move out of the transmission-model of learning, the instructional role begins to shift away from being a focus of knowledge and agent of evaluation and more towards that of being a provider of learning opportunities, design and monitoring role.

Reflective practice is one of the dimensions required by the New Zealand Teachers’ Council for a ‘satisfactory’ teacher. Kanuka and Anderson (1998) describe how asynchronous discussions between students and student/lecturer allow time for reflection to occur as a part of the student’s cognitive development and allows for the acquisition of metacognitive knowledge and skills. Vygotsky’s theory of the “zone of proximal development”, the effective intervention of a peer, adult or competent person in the learning of another person, extends into electronically mediated education. McCloughlin, Winnips and Oliver (2000) cited in Phillips (2002); for example, find that asynchronous environments allow us to move beyond “teacher initiated forms of intervention” to “an active, participatory role for students, as initiators and co-participants in (a) self-regulating learning process.”(p.121).

Students’ computer skills are clearly not constant. Skills rare today may be common two years from now. Regular student evaluations and surveys should be used to update courses and their design. The designers of courses need to keep in mind the wide range of computer skills students bring to the programme and make sure not to overwhelm low skill students or condescend to those with higher skills.

The next component of this ongoing project will need to reflect the literature review, that is, equity, flexibility, student support, and a community of learning. Such data will provide greater insight into students’ feelings and expectations after taking distance teacher education courses and online delivery of courses. Adopting a systematic approach to understanding and incorporation of information literacy skill development in undergraduate courses is essential (Bruce,1998). Early Childhood teachers would then appreciate the importance of information literacy and will be able to provide competent and confident models in early childhood centres.

Over time, more teacher education students as well as tertiary educators and teacher education institutions will become amenable to online education. But, for the present, it is important to think critically whether it makes sense to offer a certain course or programme in online form and not to assume that it will work for everybody.

"Online education is celebrated for its flexibility – students can be educated in their own home, in their own time.” (Brabazon, 2002, p112).
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Abstract

The EU Leonardo da Vinci project POOL - Project Organisation OnLine - aims to enhance current practices in project management by adding two new dimensions to the traditional project management approach. The first dimension is the distributed aspect, whilst the second is the transnational, intercultural perspective. For the students this involves not only acquiring certain technical skills but combining these abilities with non-technical knowledge, competencies such as intercultural awareness, presentation skills, online collaboration, project planning and time management knowledge as well as available tools.

In order to achieve the goal, the POOL project is composed of 10 institutions and industry partners from 7 European countries. The main outcome of the POOL project is a curriculum model which integrates the virtual and transnational elements. The development of this model is carried out through a process of refinement and adaptation of the curriculum in two phases: year one comprises a needs analysis and the development of the POOL curriculum model – year two comprises an evaluation of the draft curriculum model in a real-life student project in the field of telecommunications.

The project-based approach in POOL facilitates the practical application of the intended curriculum, to allow the students to develop their competencies in virtual project management tasks through “learning by doing” in a distributed collaborative learning environment.

Keywords: Curriculum development, virtual collaboration, competencies and learning outcomes, online project management, transnational projects
1. Introduction

The use of new technology in project management is nowadays a fact. Many companies and educational institutions have recently been using Information and Communication Technologies (ICT) tools with different purposes, in order to successfully carry out project in a variety of areas.

When introducing project management, everyone seems to be very clear about which are the competencies that every member should have. It is relatively easy to identify the needs in terms of knowledge; that is, listing a set of requirements which could be considered to be positive when selecting a candidate for a certain job in a company. To be able to work in such projects using traditional management, some competencies that might be required, could be either the use of ICT, proficiency in a certain language, knowledge in managerial issues, etc. However, what would change in project management if the team members couldn’t work in the same workplace and moreover working from their respective countries, with different cultures? POOL project gives answers to these questions with concrete solutions through the development of a model of curriculum.

2. Project Organisation Online

The POOL project

The POOL project [1] is a Leonardo da Vinci project that comprises 10 partners – 7 universities, 2 SMEs and a Chamber of Commerce - from 7 countries:

- Austria (Fachhochschule Salzburg GmbH, Badegruber & Partner GmbH, 3S)
- Finland (Kemi-Tornio Polytechnic)
- Romania (Technical University of Cluj-Napoca)
- Spain (University of Alicante)
- Estonia (Tallinn University of Technology)
- Ireland (Galway-Mayo Institute of Technology)
- Lithuania (Kaunas College).

This set-up of the project will guarantee a valid academic and practice-oriented input so that the resulting curriculum model will be beneficial for the students as more highly qualified future employees thus increasing the competence and competitiveness of companies operating in transnational and distributed project settings.

Each partner institution leads at least one of the 11 work packages (WP) in which the project has been divided, as well as assisting in other WPs.

Aims and outcomes

The main aim of POOL project is, from a general point of view, to provide a curriculum model for integrating practical project work and distance education. On an intercultural level the goal is to best prepare students to work in multi-skills and multinational teams in a distributed setting. Another priority is agree on a set of quality criteria for online project management training in university-level education based on current industry practices, as well as evaluate the curriculum development process through the active involvement
and dialogue between university-students-industry; and finally enhance awareness of the sensitive issues involved in online project collaboration.

Two will be the products resulting of the work in POOL project. The main outcome is a model of curriculum, which will be very useful for those trainers implementing it. In terms of usability, the model has been designed so that it can be directly put into practice; that is, all general aspects of online project management obtained from the research activity can be easily integrated in the form of a concrete training plan. On the other hand, it is expected that the range of applicability of the model is wide enough to cope with any of the existing educational areas (technical, social, economic, etc.) The second outcome of POOL is a handbook, which will support the trainers working in the field of curriculum design. Apart from collecting the experience during the project - in research, evaluation activities and testing of the model-, it will be presented as a guideline for curriculum developers who would like to start building a curriculum following the same approach as in POOL. It will be a valuable reference containing all the key aspects of online project management and the processes required in order to build a model of curriculum that truly integrates them. Although these are two documents that complement each other very well, the intention is that they can also be consulted independently.

**The innovative approach in POOL project**

In this paper we would like to place particular emphasis on the innovative aspects of the POOL project with regard to curriculum design, that is, the working methodology used during the project. The original approach is not only present in the final product – a model of curriculum that integrates the distributed and transnational dimensions – but also the process of development and working methods within POOL are presented here as innovative and might be taken as a referent.

![Figure 1. Process of development of the curriculum model in POOL](image-url)
As it is shown in the figure above, the project was organized in two phases; each one comprising one year. In year 1, research on relevant competencies for OPM was made and a draft of the curriculum model was designed. At this stage, POOL project counted on a pilot student project which was useful to identify some critical factors of virtual collaboration in order to pave the way for the testing of the model [3] with a second student project in the next stage.

POOL project can also be conceived as a project in two layers. On a higher level, the process involves the POOL project itself that has been working during both phases on the creation of the model. The student projects are in a lower level. This real student project constitutes the centrepiece of POOL project in the sense that, it has been the reference for reflecting on all essential aspects when carrying out a project of this nature. Therefore, communication with the students has been a continuous source of feedback that has facilitated the process of refinement and adaptation of the model.

The definition of very concrete interfaces between them has been essential. This configuration entails a different working methodology between the different work packages, since more communication has been required and had to be reported, apart from the fact that some results depended on the experience within the student activity. If we also take into account that the different WPs work online in their respective countries, it may be deduced the need of a clear planning and definition of interfaces between the different working groups. The result of the work using this special composition of the team is a model that not only includes, but also integrates the distributed and intercultural elements in the curriculum.

3. Curriculum development: innovation of POOL

Two elements provide POOL with two new dimensions rarely considered in combination in project management: a distributed and transnational approach. Besides, POOL model includes another innovative element related to the competencies and materials required to carry out a project in a distributed and intercultural environment. POOL project aims to combine in the curriculum the technical skills with the soft skills. [4]

For that purpose, the selected telecommunications student project (in which the need of acquiring and developing non technical skills is more evident) is a good case study that clearly reflects what is expected of this combination of different kind of skills and knowledge. Since the extensibility of the model is another goal in the project, it is therefore important to mention that the different competencies defined in it, as well as the learning outcomes and the set of general activities suggested for online project management, provide the model with enough flexibility to be applied in other educational areas, for example, in the economic or social field, where it might be more necessary to develop competencies in ICT, rather than focusing on managerial skills. With the intention of not restricting the model to the technical field, the Virtual Collaboration module in POOL has been raised from a more abstract perspective, focusing on the study of the processes and roles [3] that have to be
defined among the students in order to successfully collaborate in a common project.

The following table shows an example of a training unit in the learning module “Virtual Collaboration”, with the list of learning outcomes and competencies:

<table>
<thead>
<tr>
<th>Training Unit 2</th>
<th>Project management and group processes in virtual collaboration</th>
</tr>
</thead>
<tbody>
<tr>
<td>Study (self/group)</td>
<td>(L1): Concepts: communication, ICT-supported communication, tools, collaboration, virtual collaboration, matrix for collaboration tools, levels of collaboration, projects, cooperative projects. (L2): teams, types of teams, team composition, roles,</td>
</tr>
<tr>
<td>Report:</td>
<td>Synthesis of the study (5 pages/lecture) with target on needs for student project.</td>
</tr>
<tr>
<td>Forum</td>
<td>Debate on 2 topics: a) How virtual collaboration may improve my projects?, b) What processes should I set up for proper virtual collaboration with my team members?</td>
</tr>
<tr>
<td>Collaborative</td>
<td>Production of the synthesis report, forum discussions, local decisions on roles in the project: communicator, scientific, documentation. Online meeting.</td>
</tr>
<tr>
<td>Experimenting</td>
<td>Testing various tools for virtual collaborations and give the impressions in forum.</td>
</tr>
<tr>
<td>Demonstration</td>
<td>Demonstration of the various tools for virtual collaboration.</td>
</tr>
<tr>
<td>Check List</td>
<td>Verify the state of accomplished educational activities. Make suggestions for improvement.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Learning Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge on <strong>efficient communication and collaboration practices</strong> in virtual frameworks</td>
</tr>
<tr>
<td>Develop <strong>best practices models</strong> for online collaborative projects</td>
</tr>
<tr>
<td>Capacity to <strong>identify collaborative interactions</strong> in the virtual space.</td>
</tr>
<tr>
<td>Appropriate <strong>definition of roles, responsibilities and tasks</strong> for team members in the context of virtual collaboration framework.</td>
</tr>
<tr>
<td>Identify <strong>collaboration patterns</strong>; ability to generalize and think in a more abstract way.</td>
</tr>
<tr>
<td>Be able to prepare a complete <strong>Collaboration Plan</strong>.</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Manage <strong>virtual collaboration processes</strong>.</td>
</tr>
<tr>
<td>Facilitate virtual collaboration.</td>
</tr>
</tbody>
</table>

*Table 1. Training Unit 2 in Virtual Collaboration learning module*
In the student project carried out during 8 months, it became evident the need of focusing more on producing a collaborative plan, that is, planning the project in terms of virtual collaboration, rather than concentrating on the usage of specific tools, which are skills that, in this particular case, the students of telecommunication engineering already have.

In relation to the educational modules developed in POOL project, each WP in the project was responsible for researching on a specific area of competency development. The figure below shows the different modules (and additionally the WP responsible for the online assessment):

![Diagram of Learning Modules in POOL project]

*Figure 2. Learning Modules in POOL project*

The following table shows some of the competencies defined [2] during the first phase of analysis for each training module in POOL. This set of skills tried to cover, as far as possible, all the competencies that should be present in the students collaborating in an online project:
<table>
<thead>
<tr>
<th>Module</th>
<th>Competencies</th>
</tr>
</thead>
<tbody>
<tr>
<td>Virtual Collaboration</td>
<td><strong>Develop the project plan in a collaborative/distributed vision, maintaining professional and collegiate relationships</strong>&lt;br&gt;Knowledge and skills to understand the roles, to feel as part of the group, to apply different participatory processes, to demonstrate the team values and to show the capacity to collaborate for the implementation of the project plans agreed by all team members.</td>
</tr>
<tr>
<td></td>
<td><strong>Manage virtual collaboration processes</strong>&lt;br&gt;Show abilities and proficiencies in mapping project planning into the virtual collaboration platform in order: to have full-control of project management, to be effective in project documentation and to solve possible technical problems using the community experiences.</td>
</tr>
<tr>
<td>Time Management &amp; Project Planning</td>
<td><strong>Adaptability to Different Work Attitudes</strong>&lt;br&gt;PROJECT MANAGERS ... should understand differences in work attitudes and behaviours between team members and incorporate those in project planning. They should be able to provide an environment that integrates and allows a highest level of conformity to work attitudes of different kinds, both in terms of work and time commitments.&lt;br&gt;TEAM MEMBERS ... should understand and consider other team members work attitudes in their own work and time management activities.</td>
</tr>
<tr>
<td></td>
<td><strong>Managing Project Complexity and Transparency</strong>&lt;br&gt;PROJECT TEAMS ... should be able to always estimate and redefine the scope and effort of project activities (in work and time) in both initial project plans and continuous progress reports that comprehensively show transparency of all project proceedings and time correspondence to other team members.</td>
</tr>
<tr>
<td>Presentation &amp; Soft Skills</td>
<td><strong>Organisational / Presentation Skills</strong>&lt;br&gt;Organising a presentation adequately and for the proper type of medium.</td>
</tr>
<tr>
<td></td>
<td><strong>Non-Verbal Communication</strong>&lt;br&gt;The use of non-verbal communication strategies for presentations.</td>
</tr>
<tr>
<td>Documentation Standards</td>
<td><strong>Correctly fulfilled formats</strong>&lt;br&gt;Clearly and correctly fulfilled project documentation formats</td>
</tr>
<tr>
<td></td>
<td><strong>Project documentation is kept by rules</strong>&lt;br&gt;Project documentation should be kept by (programme) rules and legislative framework</td>
</tr>
<tr>
<td>Intercultural Communication</td>
<td><strong>Develop communicative awareness and recognize different linguistic conventions</strong>&lt;br&gt;Knowledge about different communication codes and the awareness about different linguistic conventions is essential in order to be able to cope with problems in communication that result from non-native language skills by adapting to different levels of foreign language competence or by using meta-communicative strategies for clarification.</td>
</tr>
<tr>
<td></td>
<td><strong>Demonstrate tolerance for ambiguity</strong>&lt;br&gt;The willingness and readiness to embrace and work with ambiguous situations and the ability to deal with them in a constructive way, is a core competence that allows members of transnational teams to resolve possible misunderstandings and prevent conflicting situations which might arise from different cultural standards, behaviours and attitudes.</td>
</tr>
</tbody>
</table>

*Table 2. Examples of competencies defined for each learning module*
One of the greatest challenges in POOL project was to guarantee the integration of each didactic module. The aim was that every student understood that all the contents presented were closely related; although occasionally these were given in different modules (the incorporation of joint training sessions played a decisive part here). After the training, the students were able to understand their project in a more abstract way, having a more general idea of what involves collaborating virtually and understanding the need of certain soft skills in IT projects.

Figure 3 shows pairs of modules which are more related and need more integration in POOL:

![Figure 3. Integration of didactic modules](image)

4. Testing the curriculum model: simulation in a real scenario

The centrepiece of POOL project is a real student project in the field of telecommunications engineering, in which 12 students from 3 countries – Austria, Finland and Romania – took part for several months. The different teams collaborated in the development of a temperature measurement system, which mainly involved programming mobile devices and embedded systems and designing a database.

![Figure 4. Student Project between Austria, Finland and Romania](image)
The fact that the POOL project team (researchers and teachers) counted on a real student project, facilitated the simulation of a possible application of the designed curriculum model and the direct evaluation of several aspects of online project organisation. This telecommunication project became a reference for the researchers, which could put into practice through different training sessions, working as trainers, some of the training units proposed. A whole training plan was provided as an annex of the curriculum document by way of example of application.

The selection of the specific training units [5] to put into practice was done based on different criteria. First, the students were able to use directly the materials and the lessons given in each session in order to make progress in their work. Another aim was that, with the selected courses, all learning outcomes and competencies defined were respectively achieved and developed with success. Although the selection of training units being evaluated was made in an atomic way – only a few of them were extracted from the whole training plan – the trainers always tried to include in a certain manner concepts from the rest of the didactic outcomes defined in other courses.

Another great contribution to the model of curriculum was the joint sessions, in which different areas of competencies were put into practice together. The students could benefit from this configuration “learning by doing” from different training units that combined, providing the students with a more general view of what virtual collaboration is.

This way, the most relevant competencies were tested. The relevance analysis was the result of the work in each work package and was also based on the results obtained from the several questionnaires provided to companies around Europe that established relevance for them.
5. Conclusion

Constant communication with the students was the key to obtain the necessary feedback. The fact that POOL partially put into practice the model of curriculum, made easier to identify the real problems, like synchronization between modules. Therefore, the final version of the model will not only present the set of general aspects for Online Project Management with some examples of training activities, but POOL will also propose a model for synchronization, that is, some methods and advice about how to best locate the different units in each educational module.

Based also on the experience in the training and the student activity (presentations, meetings, discussions, etc.) we could verify that a good definition of processes and roles within the participants is essential. We realized that in most cases this was the focus of some other problems encountered when collaborating virtually. Carrying out online projects requires a good organisation of the group and success can only be achieved when team members are aware of this need.

6. Bibliographical references


Abstract

After entering the 21st century, the Chinese Government has attached great importance to agriculture, rural areas and farmers, and has adopted a series of policies in favor of agriculture, such as enhancing the construction of agricultural infrastructures, accelerating the progress in agricultural sciences and technologies, uplifting the comprehensive agriculture production capacity, promoting restructure of agriculture, creating more employment for rural workers, increasing investment in agriculture and realizing faster growth of rural income, which have brought about positive changes in agriculture and rural development. This year, the Chinese Central Government released the first major document on the building the new socialist countryside — the primary task in the 11th Five Year Plan period, in which it makes the top priority in improving education level of rural laborers and promoting overall development of rural society. The Central Agricultural Broadcasting and Television School (CABTS) as a rural distance education institution with 25 years of experiences has been consistently implementing farmers’ training program in line with the needs to the country. This paper intends to present the audience with the rural distance education and training programs implemented by the CABTS in recent years, as well as its achievements and experiences, in promoting agricultural and rural economic development, ameliorating rural environment, increasing farmers' income, improving rural surplus labor transfer and strengthening skill training both in agriculture and non-agriculture sectors.

Key words: Rural distance education, Building a new countryside, Rural Laborer Transfer, New type of farmers,
INTRODUCTION

Since 2004, the Chinese Government has issued important documents for three consecutive years to promote the work of “agriculture, rural areas and farmers”. In Document Number One of the central government this year, it once again tabled the important tasks of constructing socialist new countryside, it emphasized at the same time training of new type of farmers so that farmers will have better education and technological skills and are good at farm business management, with the purpose of improving the overall quality of farmers. Farmers are the mainstream of new countryside construction, therefore, training and culturing millions of new type of farmers is a strategic, basic and fundamental work. Only when the tremendous human resources in rural areas are converted to human capital advantage to establish the source of sustained power driving new countryside construction, can the tasks of new countryside construction be accomplished. In order to meet the strategic requirements of the state in the work of “agriculture, rural area and farmers”, the Central Agricultural Broadcast and Television School (CABTS) is and will implement serials of education and training programs targeted at farmers, and such programs are playing important role in training new type of farmers and in serving new countryside.

Since its founding 25 years ago and as the largest rural distance education in the world, CABTS has already trained a large number of grassroots cadres, agricultural extension agents and farmers, and has made great contribution to the development of rural economy.

I. A Brief Introduction of CABTS

In 1980, the Ministry of Agriculture of China was given the mandate to contribute to distance education in agriculture. A subordinate institute, Central Agricultural Broadcasting School was established. CABTS has developed into the largest system of education for agriculture and rural development in the world. Its organizational structure involves five basic levels of schools.

The Central School is responsible for the overall management of the system, and for the production of audio-visual materials for use nation-wide. Teaching and learning are organized and evaluated through the following network of schools: 38 Provincial Schools, 330 Prefecture Schools, 2,408 County Schools, and 23,000 township teaching stations.

CABTS teaches its students both through distance education and face-to-face. Distance teaching is conducted through a range of media, including radio, television, audio and videotapes, video compact discs (VCD), Internet, Satellite and print materials. In addition, the instructional resources are delivered to farmers by “Science and Technology Caravan”, Farmer’s Library, Loudspeaker and etc.

Up to 2005, Secondary Diploma Education recruited 3.64 million students and graduated 1.87 million, Post-secondary Education recruited 124,000 students and graduated 104,000, and College-level Education recruited 450,000 and graduated 175,000; short courses in Green Certificate Training registered 9.24
million and 4.22 earned certificate, and 460,000 achieved Professional qualification Certificate after the Professional Skill Training and Applicable Agricultural Technology registered 112 million registrants.

II. Needs of national development

China is a big country with large farm population whose educational level is rather low, hence the task of bringing up farmers’ education level is heavy. According to statistics, among the 490 million rural laborers, only 13% have senior high school and higher education, 36.7% have primary school and lower education level, and only less than 5% of farmers have received systematic professional training, therefore, the tasks of education and training of farmers are very heavy. Therefore, developing modern agriculture in China, accelerating agricultural science and technology progress and promoting farmers’ income growth require that farmers remaining in farming industry must improve their professional skills, which can be realized through training in agricultural techniques and skills. On the other hand, along with accelerated urbanization and industrialization, training to prepare rural laborers to be transferred to other sectors rather than farming must be well organized so as to promote the transfer of rural surplus laborers. A team of rural grassroots cadres and backbone demonstrations farmers with middle and high level education must be nurtured, enabling them to become the fortress in agricultural and rural economic development.

III. Education and training of farmers

1. Training of new type of farmers in science and technology

Building a new socialist countryside is a major historic task in the process of modernizing the country. Farmers are the mainstream in building a new socialist countryside, therefore, creating a new type of farmer who has a good basic education and understand both agricultural techniques and business operations, and improving the overall quality of farmers are the important guarantee of new socialist countryside construction. Nurturing new type of farmers is a long-term yet arduous task. Delivering training in agricultural practical technologies is the central task of implementing rural distance education. CABTS has carried out various applicable technology training, Green Certificate Training, Professional Skill Training, Youth Farmer Training and getting science and technologies to farmer households.

Green Certificate Education, in part inspired by the success of the Green Certificate Program in Alberta, has been adopted by CABTS since the mid 1980’s. Over 3.6 million graduates have achieved competence in hog production, poultry production, household business management, fruit and vegetable production, crops, greenhouse vegetables, and horticultural skills. These people have worked as technicians, business managers, production supervisors, and farmers.

The Professional Skill Training is a skill-based training program. A certificate records training and competence of trainees in achieving specific skills for jobs in a specified farm industry. The certificate is issued by the government.
Applicable Agricultural Technology Training is the most welcomed program by people in rural areas. According to a recent survey, more than 50% of farmers preferred to learn applicable agricultural technology, of whom, 45% liked face-to-face and site-based training or demonstration. To date, there have been approximately 112 million registrants in this program. In recent years, with the rural-urban migration of labor, training subjects have been broadened from agriculture to household appliance maintenance, hairdressing, cooking, housekeeping, etc. These training programs enable migrants to find jobs more easily.

2. **Sunshine Program of Rural Laborer Transfer Training**

Among the 490 million rural laborers in China, 320 million are engaged in agricultural production that only needs 170 million laborers. The employment pressure of rural surplus laborers has become more and more outstanding. Against such backdrop, even more forceful policy measures should be taken to accelerate the transfer of rural labors to non-farming sectors. In order to bring prosperity to farmers, the number of farmers must be reduced so as to increase the per capita availability of resources in rural areas and to promote rational deployment of resources, it in turn will increase farmers’ income and realize coordinated development between rural and urban areas.

In order to accelerate the transfer of rural laborers to urban areas, to improve the quality and employment capacities of farmers to be transferred and to promote income increase of farmers and rural/agricultural economic development, the Chinese Government formulated the “National Plan for Training of Rural Migrant Workers 2003-2010”. The horizon of training of the plan is as the follows: from 2003 to 2005, before transfer and employment orientation training will be delivered to 10 million rural laborers who will be transferred to non-farming sectors and to urban areas, and professional skill training will be delivered to half of the 10 million rural laborers. On-job training will be provided to 50 million farmer migrant workers who have been employed in non-farming sectors already. From 2006 to 2010, before transfer and employment orientation training will be delivered to 50 million rural laborers who will be transferred to non-farming sectors and to urban areas, and professional skill training will be delivered to 30 million rural laborers of the 50 million. Meanwhile, on-job training will be offered to 200 million farmer migrant workers who have been employed in non-farming sectors. In order to implement the Plan, the Ministry of Agriculture of China in association with other ministries and commissions have been implemented the “Sunshine Program of Training for Rural Laborer Transfer” while support is given to the major areas of rural laborer export. Through tailored training for orders, training for fixed locations and employment areas, professional skill training is offered to farmers to be transferred.

In 2004, the central government budget arranged 250 million RMB Yuan of funds to subsidize farmers who participate in such training at the standard rate of 100 RMB Yuan per day. Over 2.5 million farmers were trained and transferred in 2004 and over 80% of the trained were employed.
In 2005, the central government budget arranged 400 million RMB Yuan for the implementation of Sunshine Program. According to incomplete statistics, the central government input also mobilized 440 million RMB Yuan of input from provincial budget. The Program has been implemented in 1,700 counties through 7,139 training institutions. Trained rural laborers have reached 2.8 million and 2.5 million of the trained have found jobs accounting for 84%.

This year, the central government budget increased to 700 million RMB Yuan to support training of rural laborers for transfer to non-farming sectors and the program of science and technology training of new type of farmers. It plans to provide training to 3.5 million rural laborers.

In the process of implementing the training of program for rural labor force transfer, CABTS system has shouldered one third of the tasks.

3. Developing a well-trained rural human resources

The development of human resources in rural areas is mainly through undertaking vocational education, collaborative higher education and post-vocational continued education to train large number of township and village cadres, backbone farmers and demonstration households, who unite together and lead farmers to adopt advanced technologies for the development of agricultural production.

CABTS offers degree courses for farmers and professionals to improve their qualifications and stay current with developments in their fields of expertise.

Secondary Education Program on agricultural technology is planned for rural youth, farmers, agri-technicians, rural enterprise managers and rural grassroots leaders. The Central School and Provincial Schools offer about one hundred fields of specialization under four categories — Crop Cultivation, Animal Husbandry and Agricultural Economics and Management, and Agriculture Engineering. The system has developed over 360 courses with annual offerings of about 130 courses.

The Post-secondary Education Program on agricultural technology was mandated in 1999. The specializations are Agriculture Extension, Rural Economic Management, and Veterinary Science, which are designed to improve the qualifications of long-term employees and recent graduates from secondary education in agriculture.

College-level Degree Education has been offered in collaboration with other agricultural universities or colleges since 1995. The program is conducted by the provincial schools, and courses focus on local agriculture production situations.

In order to support the new countryside construction, as one of the 15 tasks to be accomplished by the Ministry of Agriculture in 2006, CABTS is implementing the “One million vocational graduates program”, which is to train a large number of human resources in rural areas to equip them with practical skills and vocational school diploma, who vehemently love agriculture and root in rural areas, and have education and civilized behaviors, who understand technologies and are good at farm business management. This program will strengthen their capacity
to lead farmers to prosperity so that they will become pioneers of constructing socialist new countryside and backbone for developing modern agriculture.

“One million vocational graduates program” will be based on industries and its curriculum development will center the needs of industries. Starting from this year, it is planned to use 10 years to train 1 million human resources with practical skills in rural areas and with vocational education diploma. Among them, there will be 350,000 skilled farmers in crop and animal farming and product processing; 450,000 skilled in farm business management and 200,000 skilled in different disciplines and sciences and technologies of importance to rural areas. During the 11th Five Year Plan, a total number of 500,000 skilled persons will be trained, who are good hands in production, farm business management, skilled workers and rural science and technology workers.

The Chinese Government attaches great importance to education and training of farmers. The principle of industries supporting agriculture and urban areas supporting rural areas presents a good development opportunity to the education and training of farmers in China. Since rural China covers extensive areas with striking differences among regions and farmers usually engage in multiple types of industries, education and training of farmers are of the features of individualization and multiple dimensions. Furthermore, education and training of farmers face many limiting factors and grave difficulties. Therefore, the role of modern distance education and training in agriculture should be fully tapped, which should be organically combined with traditional education methods. Radio, television, Internet, satellite networks and other modern education technologies should be utilized in an integrated manner so as to facilitate the learning of farmers in locations close to their fields. Traditional education and training methods of face-to-face instruction and hands-on teaching should be adopted. In education and training, farmers’ will should be respected and attention should be given to the basics, systematic, accurate targeting and practicality, so as to address the practical problems farmers face in production and living.

In short, education and training of farmers conforms to the needs of the national development, and it should take farmers’ needs and satisfy farmers as the starting point and the ultimo objective. Based on the principle of bringing convenience to farmers and getting close to farmers, it is to use advanced ideology to culture farmers. Education and training should serve farmers with rich contents, attract farmers by vivid educational methods and serve farmers with convenient approaches. Training of new type of farmers in large-scale will provide forceful buttress in terms of human resources and talents to the construction of socialist new countryside.

References

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E-LEARNING IN JAPAN:
STEAM LOCOMOTIVE ON SHINKANSEN

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ABSTRACT

This paper aims to share the outcomes of a qualitative survey on the status of e-learning implementation in Japanese higher education institutions. The research evidence is gathered through: 1). a literature survey related to e-learning in Japan, 2). analysis of the websites of the universities, 3). observations obtained during Tokyo e-Learning World 2005 Expo and Conference, and 4). interviews conducted with the faculty members at the working on e-learning projects in the universities visited. The survey revealed that e-learning has not been adopted by Japanese universities wholeheartedly despite the availability of a highly developed ICT infrastructure nationwide. The main reasons for such gap between technological availability and its actual implementation can be attributable to the lack of support systems to facilitate the utilization of ICT in instructional processes and the lack of long term strategic visions to utilize ICT to enhance teaching and learning in many higher education institutions in Japan. These dilemmas are evaluated from the cultural, societal and managerial perspectives. Cultural perspectives included shared values and customs among policy makers and practitioners. Societal considerations involve the university system itself, its funding structure, and the demand of e-learning among potential students. From the managerial point of view issues such as leadership of university governance and long-term strategic visions of the institution are examined. Finally future prospects of e-learning in Japan are discussed.
1. Introduction

In many parts of the world, e-learning is being embraced as the results of the shift towards a knowledge-based economy and the wide availability of new information and communication technologies (ICT). Japan, as one of the most industrialized countries in the world, is not an exception. Making “E-Japan Strategy” as a slogan to promote ICT in Japan, the Japanese government has been trying hard to promote the use of ICT in education. Unlike in the U.S., Canada and Australia where e-learning has rather emerged out of needs and necessity as an extension to distance learning, the educational use of ICT in Japan so far is something the government is trying to impose on to the institutions. Bates (2001) identified three main ways to use e-learning in universities and colleges: technology-enhanced classroom teaching, distance education, and distributed learning. In Japan, e-learning usually means only the Bates’ first category, technology-enhanced classroom teaching.

In the following sections, higher education systems in Japan, the current status of technological infrastructure, and the current state of e-learning implementation in Japanese higher education are described. Then discussions are made in terms of the gap between the technological availability and the actual implementation of such technologies in the educational contexts. The causes of the gap are discussed from the cultural, societal and managerial perspectives. Cultural perspectives included shared values and customs among policy makers and practitioners. Societal considerations involve the university system itself, its funding structure, and the demand of e-learning among potential students. From the managerial point of view issues such as leadership of university governance and long-term strategic visions of the institution are examined. Finally future prospects of e-learning in Japan are discussed.

2. Japanese Higher Education Systems

Japanese undergraduate postsecondary education system is basically composed of universities and junior colleges. As of 2005 there are 726 four-year universities and 480 junior colleges. The great majority of junior college students are women, and the number of junior colleges has been decreasing as more and more women have started to opt for four-year colleges. Seventy-five percent of all universities and 88 percent of all junior colleges are private. In 2002, 11 percent of four-year university graduates went on to graduate school.

The declining the birth rate is a serious issue among higher education institutions in Japan as soon the number of seats will equal to the number of potential students; in other words, soon everybody can enter into a college if he or she is not selective. In other parts of the world, demand for college and universities usually exceeds the supply. However, in Japan that is no longer the case and many lesser known institutions are having tremendous difficulties in recruiting new students. In fact, a few universities have been forced to merge with other universities, or in some cases be closed down due to the failure in recruiting enough students to get the subsidy from the government.
Since 2000 Japanese university system has begun to undergo an extensive series of reforms since the postwar-era reforms in the late 1940s. As part of the reorganization effort which began in fiscal 2003, the 99 national universities were reorganized into 89 institutions. In addition, the national universities were transformed into independent administrative institutions with the objective of creating a more competitive and independent environment in which the universities can introduce private sector management techniques and develop their own special strengths with respect to both education and research. In order to nurture people with the wide range of expertise needed by society, universities also established new specialized graduate school programs in both business and law. (Web-Japan, 2006).

Japan’s recent reforms in higher education include the authorization of for-profit universities and the incorporation of national universities. Both initiatives are connected to the Japanese government’s recent moves towards deregulation. It is expected that these changes in the education system will affect the current and prospective students as well as the administrators of the educational institutions. Those dimensions of the reforms related to e-learning are summarized in Figure 1.

Figure 1: Major policy initiatives related to e-learning in Japan

<table>
<thead>
<tr>
<th>IT Basic Law (Nov. 2000)</th>
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<tbody>
<tr>
<td>e-Japan Strategy Statement I (January 2001)</td>
</tr>
<tr>
<td>(Make Japan the world's leading IT nation by 2005)</td>
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<tr>
<td>e-Japan Priority Policy Programme,</td>
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<td>e-Japan Priority Policy Programme 2002</td>
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<tr>
<td>e-Japan Priority Policy Programme 2003</td>
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<tr>
<td>e-Japan Strategy Statement II (July 2003)</td>
</tr>
<tr>
<td>(To continue to maintain its position as the world's leading IT nation in the future)</td>
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<tr>
<td>&quot;Standards for the Establishment of Universities&quot; have been revised to include</td>
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<tr>
<td>e-Learning (i.e., distance learning classes via the Internet) as credit-offering regular classes.</td>
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<tr>
<td>Authorization of for-profit universities</td>
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<tr>
<td>Incorporation of national universities</td>
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<tr>
<td>Deregulation (2004)</td>
</tr>
<tr>
<td>Post 2005 e-Japan Strategy (April 2005)</td>
</tr>
<tr>
<td>(To realize the society in which anybody can receive the benefits of IT at anytime at anywhere)</td>
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</tbody>
</table>
3. The Current Status of ICT Infrastructure in Japan

Under the e-Japan Strategy, a low cost, high-speed Internet infrastructure has been created in Japan, and the ICT infrastructure in Japan is considered to be the fastest and the most cost-effective in the world. The Internet penetration rate in Japan as of the end of 2004 was 62.3%. The percentage of households who have broadband Internet access (e.g., FTTH, DSL, Cable Internet, and wireless access) out of the total number of households who have the Internet access at home was 62% as of the end of 2004 (MIC, 2005). According to a survey conducted by the Ministry of Internal Affairs and Communications (MIC) in 2004, 80% of the respondents agreed that ICT use had made a lot or some progress in the fields of information gathering, shopping, communication, entertainment, and financial transactions, but 30 to 40% of the respondents believed that ICT use had made little or no progress in the fields of administration, medical care, and education. In the field of education, only about a half of the respondents agreed that ICT use has made a lot or some progress.

In 2003, there was one computer for every 8.8 students in public schools and the Internet connection rate of public schools reached 99.8%. In a word, almost all the public schools in Japan are currently connected to the Internet. Over 70% of the public schools have the Internet access at 400 kbps or over and over one-third of the public schools have LAN installations. In the field of higher education, the ICT infrastructure has been implemented even better. By January 2000, 99% of higher education institutions in Japan had access to the Internet (Yoshida, 2001).

Looking toward the year 2010, a new national strategy called “u-Japan Initiative” was implemented in June 2004, aiming to make Japan a society in which “anytime, any place, by anything, and anyone” is linked to networks. The u-Japan Initiative has four principles of “u”: ubiquitous, universal, user-oriented, and unique, and it expects to solve many current social problems by implementing ubiquitous networks. In the initiative statement by the Ministry of Internal Affairs and Communications (MIC), there is no specific mentioning of its relationships to education except that promoting life-long learning is mentioned as an issue they have to deal with towards the year 2010. Though it is stated that the use of ICT in the areas of administration, medical care, and education is lagging behind of other areas, but no specific measure to promote the use of ICT in education is mentioned in the policy statement.

4. The Current State of e-Learning in Japan

E-Learning in Japan has a strong political connotation as the Japanese Ministry of Education, Culture, Sports, Science and Technology (MEXT) has been promoting the development of e-learning in higher education institutions in Japan as part of the e-Japan Initiative described above. The initiative set specific goals such as the tripling of the number of Japanese universities using advanced e-learning technologies by 2005. To further facilitate the adaptation of e-learning by higher education institutions, MEXT increased the acceptance of up to 60 credits, out of 124 credits required for a four-year undergraduate degree, earned through
e-learning toward degree programs in March 2001. As for correspondence institutions in 2000 all 124 credits started to be allowed to be earned through asynchronous two-way online education.

Higher education institutions in Japan have slowly started to implement e-learning. According to the study done in 2005 by the National Institute of Multimedia Education (2006), 41.4 percent of the private institutions surveyed have offered e-learning classes while 69.3 percent of the national universities responding offered e-learning programs. In total, 36.3 percent of the universities surveyed have offered e-learning classes. As for the modes of e-learning, 31.4% of those surveyed offer e-learning as part of blended learning, and 20.8% of them offer e-learning as supplemental to classroom activities. Only 10 percent of those surveyed actually offer stand-alone e-learning courses in which students are not required to attend classes physically.

Respondents were also asked about factors that could be holding back the further development of e-learning at the university level in Japan. The most cited factor was the lack of content creation and system management skills among faculty (61.9 percent), the lack of knowledge and skills of developing e-learning systems (50 percent), the lack of understanding of educational effects among faculty (49.7 percent), doubts about the safety of intellectual property rights for contents placed on the e-learning systems (44.5 percent), and the lack of budget (42.4 percent).

In terms of the development of actual contents of e-learning, 30.8 percent of those surveyed said they develop contents at their institutions. Nearly half of the contents were developed by faculty members as their individual efforts. As far as the tools of e-learning are concerned, learning materials created by presentation software such as Microsoft PowerPoint and streaming video have been increasing over the past four years while the use of text-based interactive tools such as discussion boards and chat has been decreasing. This indicates that e-learning in Japan is moving towards the model of traditional correspondence schools where students study on their own without much interaction with teachers and other students.

In order to boost the implementation of e-learning in higher education institutions in Japan, the Ministry of Education, Culture, Sports, Sciences and Technology (MEXT) started so-called “Gendai GP” program in 2004. The aim of the program is to fund those colleges and universities who have demonstrated enough efforts and shown a clear plan to implement a program which deals with one of the six areas MEXT specifies: 1. contribution to regional activities, 2. promotion of education of intellectual property rights, 3. cultivation of Japanese who can use English in business settings, 4. strengthening of educational systems by means of collaboration with other institutions, 5. industry-academia collaboration through exchange of human resources, and 6. practical e-learning through the use of ICT. Through the Gendai GP program, 14 colleges and universities and one consortium of specialized schools were funded for the area 6 above in 2004, and 13 colleges and universities and one consortium of specialized schools were funded in 2005. The proposed programs include development of a self-learning systems based on problem-solving approaches and development of a new e-learning curriculum for astronomy.
To share the cost of starting and running e-learning courses among multiple universities, several regional consortia have been established in Japan recently: the Consortium of Universities in Kyoto, the Consortium of Universities in Osaka, the Consortium of Universities in Southern Osaka, International Network University Consortium in Gifu, the Seto Consortium of Universities, the Consortium of Universities in Tochigi, University Consortium Oita, the Consortium of Universities in Yamagata, the Consortium of Universities in Sanin, the Consortium of Universities in Okayama, the Consortium of Universities in Ishikawa, and the Setagaya Consortium of 6 Universities.

5. Cultural and Societal Considerations

In the nation where Confucian value systems have been employed and teachers are considered to be the absolute authoritative figures to whom students should show respects (at least on surface) and eschew questioning in public, the educational paradigm, “student-centered learning,” is harder to be implemented than it is to be discussed among academicians. Throughout the school system which leads to higher education, students are trained to be good at taking tests by memorizing what is being taught instead of being encouraged to think critically.

Due to the above reasons, most e-learning systems developed and implemented in Japan are those which attempt to repackage the traditional mode of instruction by video recording instructors’ lectures and making them available online. There has been little consideration to the pedagogy of e-learning, especially learner-centered approach, and interactive tools such as discussion boards are rarely utilized in e-learning in Japan. Therefore, e-learning tends to be considered “boring” or “ineffective” despite the cost to create its contents.

As for another cultural consideration, Japan is considered to be a “high-context” culture where many things are understood without words and non-verbal communication is heavily valued. Though asynchronous discussion-based e-learning through text is slow to be introduced in Japan, videoconferencing systems to support inter-university synchronous distance learning especially among public universities was well implemented. Over 120 universities and other institutions are linked to the satellite-based Space Collaboration System (SCS) which the National Institute of Multimedia Education has developed and serves as its hub. Though the recent usage of SCS by universities is decreasing, videoconferencing systems are still very popular means to conduct distance learning in Japan.

Another reason why e-learning is lagging behind of other developed nations in Japan may be because of the lack of training and incentives for teachers to use ICT. Of course, there are a handful of teachers who are enthusiastic about utilizing ICT in instruction, but the majority of the teachers are not interested in making extra efforts to utilize ICT in their instruction without any tangible incentives and without any evidence of improving learning outcomes of students. Though things are changing, for most teachers in higher education institutions, teaching is something they have to do to keep their jobs, but is not something they have to make extra efforts to improve as it is not much evaluated for their promotion and tenure.
In the past, many individuals who were enthusiastic about using ICT in their instruction did so out of pure curiosity and enthusiasm. However, when their curiosity and enthusiasm wears out, there remains nothing to sustain their efforts to continue the practice as there is usually no institutional supports for them to do so. Those initiatives such as Gendai GP described previously have given good incentives to those enthusiastic individuals, but we doubt the sustainability of the programs funded by Gendai GP after the funding runs out. In order to promote e-learning beyond those technological enthusiasts to crucial mass, universities have to provide faculty members with institutional rewards and support infrastructures to adopt e-learning.

In many colleges and universities, especially those public ones in Japan, staff members other than faculty members are given different positions every 3 to 4 years, which prevents them from becoming experts in one area of school administration including technical supports. When they become knowledgeable and comfortable with their assigned duties, they have to move to new positions and start over from scratch.

Bureaucracy is another barrier to successful implementation of e-learning as it requires a tremendous amount of paperwork and negotiations to start anything anew in higher education institutions. Bachnik appropriately stated this contradictory situation in Japan, by saying “If this environment could be pictured as having hands, the right hand would be avidly promoting IT, while the left hand would be simultaneously blocking it” (Bachnik, 2003, p.2).

In sum, though implementation of e-learning should be a paradigm shift in educational pedagogy as well as in educational administration, in Japan implementation of e-learning is promoted within the old framework of educational systems. This contradicts itself and ends up spending tremendous amount of money and resources in vain.

6. Managerial Issues

For traditional educational institutions moving towards e-learning necessitates a transformation from the traditional ways of carrying out teaching, learning and administrative activities to new ICT integrated systems of conducting these processes. It is necessary for educational institutions to review their organizational structures and management practices in the light of the evolving technologies and make the necessary updates in the structure and functioning of their systems. Although various management issues are handled separately historically distance education practitioners are interested in management of distance education systems usually emphasizing the diversity from the management practices of traditional educational institutions.

Panda (2003) categorizes the managerial issues that are relevant in e-transformation projects as policy and planning, institutional management (leadership and management of change, management of academic development, management of research and development, and management of resources), operations management (instructional design, media development and production, material production and distribution, services to students, and student assessment) and quality assurance and accreditation (institutional and programme evaluation,
and internationalization). When the management issues are examined in real contexts drawn from case studies of universities in Japan following weaknesses are observed (Ozkul, 2006):

- **Policy and planning**
  The projects are not accomplished as an extension of a institutionwide policy.

- **Institutional management**
  University administration does not have a direct support and resource allocation for the projects.
  An ad hoc unit which is establishing and maintaining the technical infrastructure and technical support services for online learning is rare.
  The e-learning material developed by the faculty does not have any significance for their academic promotion and advancement.

- **Operations Management**
  In general e-learning implementations are not at a level that the operational problems are critical.
  Instructional design is often neglected.
  Financial aspects are not are not evaluated
  Major barriers exist as explored by Yoshida (2001)

- **Quality assurance and accreditation**
  There is no mechanism for quality assurance and accreditation

  Human support is another important aspect of managerial issues of e-learning. Bates (2001) points that there are four levels of human support required for fully implementing e-learning: technology infrastructure support staff, educational technology support staff, instructional design staff, and subject experts. In most higher education institutions in Japan, the middle two kinds of support staff, the educational technology support staff and instructional design staff, are missing.

  Funding is another issue. E-learning projects in Japan are usually initiated with some grants. Grants pay for the initial cost of physical facilities and equipment, but rarely pay for on-going operation and maintenance of the facilities and equipment. Most technologies have limited life span due to technological changes and the cost of human support for the facilities and equipment is often neglected in the funding. As Bates (2001, p.39) indicates, investment in technological infrastructure “should be seen as a recurrent or operational cost,” but in reality it is often seen as one-time capital investment in Japanese higher education institutions.

7. Conclusion

  Three primary obstacles inhibit the success of e-learning in Japan: cultural barriers, societal factors and lack of sustained management commitment and leadership. It is expected that global trends and internationalization of the education will have an impact on removing cultural barriers and society to adopt new paradigm of learning. The official website of the MEXT states that there is a growing belief, however, that the educational system needs to change in order to respond to the challenges of the 21st century. On the other hand educational
institutions can not fully exploit the opportunities provided by e-learning without making necessary changes in the structure and management practice. In addition, the quality of education cannot really be improved by e-learning if the technology is used to supplement teaching without changing the basic method of classroom organization and teaching.

As Bates (2001, p.27) noted, e-learning is revolutionary as “it requires radical changes to the organization of campus-based teaching.” However, Japan fails to recognize it and treat it on the continuum of the old educational systems. Fully embracing the benefits of e-learning requires radical changes in the institutional structure, management, human resources, funding allocations, faculty development, reward structure of faculty tenure and promotion, and pedagogy. Japan is the country where the technological infrastructure is ready for e-learning, but it is slow to adopt e-learning as its education system itself is not innovated yet.

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1 The Shinkansen (新幹線) is a network of high speed rail lines in Japan on which the famous "Bullet Trains" run. (http://en.wikipedia.org/)

ii In Japan, there are two different rules applying to on-campus institutions and correspondence institutions.

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Widening Access to Higher Education:  
Open and Distance Learning in Higher Education Setting in Indonesia

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Abstract

The advancement of ICT offers effective and efficient learning support at all levels of education and in all fields of knowledge, especially in open and distance learning. One manifestation of this trend is the application of ICT in appropriate combination with traditional face-to-face classroom based teaching and learning to improve access to quality education, as well as to provide practical support for learning about the digital tools of today’s society. Another manifestation is the accelerating development of ICT-based open and distance learning with the emergence of virtual learning in all parts of the world.

This paper is going to look at the picture of open and distance learning initiatives in higher education in Indonesia, and the influence of information and communication technologies in those initiatives. Some distance learning will be explored, and present results of such initiatives will be illustrated. Some concerns and further considerations on the development of ICT-based ODL in Indonesia will also be discussed. It is expected that such illustration will provide a clear picture of development of ICT-based ODL as an effort to widen access to quality education in Indonesia.

Keywords: open and distance learning, information and communication technology, Indonesia, ICT-based ODL initiatives
1. Introduction

The need for nations to increase the quantity and quality of human resources services through education will undoubtedly place continued pressure on the demand for open and distance learning. An additional factor that operates frequently in transitioning countries is the rapid increase of population. Indonesia and Southeast Asia’s search for a cost effective and efficient way to provide access to education at all levels will further make more demands on open and distance learning models (Jegede & Shive, 2001). Many Indonesians continue to live in rural and remote areas and have a significant demand for education, which has not been met. Many Indonesian are still facing economical, geographical, as well as time constraints to participate in formal conventional education. On the other hand, the new vision of the national education systems has challenged higher education to provide quality education for all, and to increase participation rate from 14.2% in 2005 to 35% in 2025.

Within the context of rapid technological change and shifting market and economic conditions, higher education is challenged to provide increased educational opportunities without the benefit of increased budget allocation. Many educational institutions are answering this challenge by developing open and distance learning programs (Bates, 2000). With the advancement of ICT which offers effective and efficient learning supports at all levels of education and in all fields of knowledge, especially in open and distance learning, another manifestation is emerging through the accelerating development of ICT-based open and distance learning and the emergence of virtual learning in all parts of the world (Khan, 2002).

Open and distance learning is seen as the most feasible, inexpensive, and “easy” mode of education which can open up access to education for many students. Open and distance learning is also perceived to be able to provide adults with another opportunity for education, while reaching those disadvantaged individuals limited by time, distance, or disability, and updating the knowledge base of workers at their places of employment (Churton, 2006). In Indonesia, open and distance learning, although is not the only answer to educational solutions, is one of the legal solution that if designed properly and qualitatively can provide opportunity and access to quality education in a local, national, and global scale.

This paper is going to look at the picture of open and distance learning initiatives in higher education in Indonesia in the context of Southeast Asian Region, and the influence of information and communication technologies in those initiatives. Some open and distance learning will be explored, and the results of such initiatives will be illustrated. Some concerns and further consideration on the development of ICT-based ODL in Indonesia will also be discussed. It is expected that such illustration will provide a clear picture of development of ICT-based ODL as an effort to widen access to quality education in Indonesia.

2. Policy of ODL in Indonesia

In Indonesia, distance education was started in the 1950s. It was first seen as an alternative mode of education to prepare teachers via correspondence.
courses. Nevertheless, the launching of the Universitas Terbuka (UT) – a distance education university – in 1984 marked the popularity of distance education in Indonesia.

The massive nature and the application of the economy of scale in distance education have appealed to much higher education to go into distance education business. The claims made by the universities are various, among others, they are trying their best to incorporate ICT into their educational practice to be able to offer quality education across time and space, thus serving the needy students in remote urban areas and they are offering education at the affordable price, as well as to apply ICT in appropriate combination with traditional face-to-face classroom based teaching and learning.

Just like many other innovations in education, sometimes replications are made based on the tangible aspects, without enough understanding of the underlying intangible assumptions and philosophy. This applies in the case of distance education. Some of the institutions translate the distance learning as remote classroom. Some universities see distance education as offering a stack of lecture notes and textbooks for students to read on their own, until the exam time comes. Still other universities translate distance learning as in campus e-learning mode, whereby the students are encouraged to take active role in their own learning and become autonomous, by accessing the learning materials available on the web or in the internet, and the teachers are also expected to use the web or internet to store their lectures note, and or to search for references. The face-to-face interactions between teacher and students are determined to remain as it used to be. This mode of distance learning is applied by some of the private universities which have invested in ICT to prepare the students to become the world citizens.

In 2001 the government announces a new regulation for higher education system, regarding the distance education mode. The new regulation allows conventional universities to offer some of their programs or courses utilizing the distance learning mode. They apply dual mode in the teaching and learning activities, conventional and distance learning. However, the new regulation also stated clearly that only the ICT-based distance education is allowed to obtain review and evaluation for approval.

The regulation has been reconfirmed further by the new law on national education system stating that open and distance learning is one of educational system employed in Indonesia, there has been many initiatives commenced by government as well as by private sectors in building the ICT infrastructure for education. At the same time, there are also initiatives taken by universities to be ICT-based distance education.

3. Some ICT-based ODL initiatives

Within the framework of Indonesian national education vision 2025: Smart and Competitive Indonesian, access and equity to quality education is indeed imperative. Educational system at all level is expected to provide opportunities for all citizens to a seamless learning process, inspiring and enabling individuals to develop to the highest potential levels throughout life, so that he/she can grow...
intellectually and emotionally, be well equipped for work, and contribute effectively to society, as well as achieve personal fulfillment.

At present, unbalanced access between remote and central regions in Indonesia to quality academic staff is still a concern of national development in the country. At present, the ratio of student in higher education for every 100,000 population in Indonesia is relatively low. Equity issue, in this case, can be addressed by expanding the existing higher education system to allow more access which will promote equal distribution at the local, regional, and national level. In this case, open and distance learning – supported by ICT – is seen to be able to provide answers to both access as well as equity challenge. In addition to Universitas Terbuka, which is a single mode open and distance learning university, there are at least four other universities have been engaged in ICT-based open and distance learning, i.e., Universitas Indonesia, Universitas Padjadjaran, Institut Teknologi Bandung, and Universitas Gajah Mada.

3.1. Student-centered E-learning Environment in Universitas Indonesia

Universitas Indonesia (UI) has enjoyed the support of Global Distance Learning Network (GDLN) Project from the World Bank since early 2000. Based on the availability of the system, and also its internal e-based education development, UI aims at expanding its education services to other potential students across geographical distribution.

In the effort of widening access to higher education and making the quality and relevant education available for Indonesian, UI collaborates with other public universities in remote areas (especially outside Java) to offer its educational services. Hasibuan (2006) mentioned that through such collaboration, UI will be able to disseminate and share its quality resources to other public universities for increasing the quality of educational services. Further, by empowering local higher education institutions, collaborative research can also be developed, and seen as the most strategic activities out of the collaboration.

Facilities from GDLN is employed as UI gateway to bridge the UI Campus Network (Intranet) – called Juita with the public network (WAN & Internet). To facilitate the e-learning environment, UI develops Student-centered E-learning Environment System (SCELE) which is based on Moodle. SCELE is designed to be a software tool to produce online-course (web-based) which is modular and based on Linux/Windows platform. Interaction in SCELE is facilitated through e-mail, discussion forum, and chat from lecturer to learner, learner to lecturer, and learner and learner. SCELE is built on modular concept to enable addition or removal of modules based on its suitability or necessity.

There are five main features of SCELE, i.e., user management, course management, content management, communication management, and evaluation management. Thus far, aside from technical aspects, content development has been the most challenging task (Hasibuan, 2006). The three level of content, i.e., course materials in PowerPoint, enriched course materials, established pointers as linkage to other sources of knowledge, is developed into two main streams, the course graph and the assessment graph. However, the lack of expert in e-learning and instructional design for e-learning in UI has directed the effort to be “just do it and
improve as we go along”. Therefore, in many courses, the content in SCELE is just a mere transfer of the face-to-face lecture note into an electronic format. For this purpose, UI is making an effort to establish a supporting unit to assist academic staff in integrating the face-to-face courses with ICT to be e-learning courses, and to provide services for campus-wide e-learning development in UI.

Thus far, the use of e-learning course in UI is still supported by printed textbook and also face-to-face meeting on campus, which then form the blended learning. Nevertheless, based on its relatively successful attempt in e-learning, UI is eager to extend the use of SCELE in the university wide programs, as well as to other stakeholders. Further version of SCELE which is lightweight to enable offline access of SCELE by students with narrow bandwidth internet access. For these technical aspects, UI enjoys the benefit of support from its school of computer science. For its content, according to Hasibuan (2005), UI will try to develop dynamic course and assessment graph which will enable students to track the status of their study activities. They will also explore the development of personalization module, the use of problem-based learning and contextualized learning as interaction strategies in their e-learning environment, and inclusion of various subject matter areas offered through the e-learning mode.

3.2. School on the Internet at Institute of Technology Bandung

School on the internet in Asia (SOI Asia) is a project funded by the Government of Japan focusing on educational sharing in Asia. The project focuses on universities as entity to embark on collaboration based on the emerging high demand on the international cooperation in higher education, high demand on the Internet deployment, and the high value of educational sharing among multilateral and multicultural countries.

SOI Asia has been started since 2001, and in Indonesia it is hosted by the Institute of Technology Bandung. It has been established as an educational consortium involving 18 institutions in 11 countries in Asia, i.e., Thailand, Lao PDR, Myanmar, Indonesia, Malaysia, Vietnam, Philippines, Bangladesh, Mongolia, Cambodia, and Nepal. Meanwhile, the Japanese partners include Tokyo University of Marine Science and Technology, Tohoku University, Japan Advanced Institute of Science and Technology, Keio University, The Japanese Society of Fish Pathology, and WIDE Project. In addition to the collaboration among those institutions, the project also welcomes worldwide individual contributors to carry out its programs. Among the programs of SOI Asia are teleconference and ICT-based courses at graduate school level (60 courses), special sessions (including Tsunami session), network operator workshops, research exchange (for 3 months), students exchange to graduate schools in Japan, graduate studies co-advisory program.

Steps in establishment of SOI Asia include network infrastructure development, human resources development (especially for network administrators), educational environment development, partnership among universities, and educational program development and implementation.

In terms of network infrastructure development, thus far SOI Asia has supported the establishment of pseudo broadband internet environment by utilizing receive only satellite equipment and UDLR technology. In the near future, it is
expected to be able to provide enhanced monitoring technology for stable operation, and expanding sites in other countries. The human resources development effort was focused mainly on network administrators through operators' workshops, operators' team building, monthly meeting, and short training programs. In the future, the training program is expected to be standardized and expanded to be local initiatives in Indonesia and Thailand. Through educational environment development, lecture site, gateway site, and student site for lecture site portability and stable operation has been designed. In addition, the standard environment for classes, multicasting system, and also network monitoring tool have been developed. Nevertheless, further exploration is still needed to improve the audio quality and interactivity within limited bandwidth.

In terms of partnership among universities, SOI Asia has been able to establish a steering committee which meets twice a year, to produce and share common curriculum and instructional activities, to draw policy on new sites, and then to also established academic committee, operators committee, research committee. The partnership among universities, in the future, is expected to be able to promote transnational/transborder education, and also cross institutional credit transfer, i.e., in the area of internet operation, advanced technology of marine science and technology, and biotechnology.

This university partnership is also supported by educational program development and implementation, which currently include sharing of 7 courses and 70 lecturers on biology and fisheries with more than 1000 students participating. Lectures are delivered from Asian partner sites via various communication programs, i.e., teleconference, multipoint real-time seminar, e-learning.

With the fast development of the project, SOI Asia still faces a challenge from the students who finds the courses and programs relatively less attractive, of a little value, and less rewarding. Many students expect the courses offered through SOI Asia will be able to give direct award to their study, i.e., grades, certificate (or accredited courses), and also opportunity to obtain recommendation to study in Japan. Since the system for transfer of credit has not been settled, and the offer through SOI Asia is more oriented toward academic enrichment, the students are less motivated to participate in the course, which demand a different set of skills and requirement on the part of the students.

3.3. Smart and Innovative Learning at UGM

Smart and Innovative Learning at UGM (SMILE@UGM) is a new learning approach taken by Universitas Gajah Mada to improve the quality of its education. The approach is founded based on the spirit of education for all, and provision of quality education for all.

UGM which is located in Yogyakarta has been one of the outstanding public universities in Indonesia. Within Yogyakarta itself, education is a major economic sector with more than 200 higher education institutions in the city. Therefore, Yogyakarta has a large pool of knowledge and information resources, as well as competent human resources. The learning resources range from libraries in universities and government institutions, academic units, government institutions, non-government organization, industries, and many others. ICT-based education
employing the available learning resources is seen as one way to improve UGM’s education services.

ICT-based learning in UGM is perceived to offer improvement of education materials and human resources, to increase access to quality learning materials, to overcome the problems of limited physical facilities for students, and to make optimal use of ICT-based communication channels to distribute knowledge and information. Based on those perceptions, UGM develops key strategies to embark in ICT-based learning initiatives. The strategies include the use of ICT, content development, users’ awareness and ICT skills development, development of sharing and exchanging mechanism for better access and learning communication. To carry out those strategies, UGM employs the concept of (networked) learning resources center to be available physically as well as virtually as a place where teachers and students can interact in a learning process, and a place for repository of learning resources.

The development of ICT-based learning initiative in UGM or Smile@UGM has been first focused on small scale development of Faculty of Engineering (FE). In FE, the Smile@UGM is combined with the use of problem based learning as virtual instructional strategy. The content development consists of development of underlying theories and concepts, examples and case studies, documentation, references, technical manuals, exercises and practices, and external resources (linkages) for each course in engineering. Some consideration underlying the development of content, i.e., emphasis on effective transfer of information (correct and updated contents, minimal distractions), requirement of minimum learning effort (user friendliness), the use of multimedia format, and also the use of the most efficient and affordable delivery format (low bandwidth connection).

From the development efforts, the working team of Smile@UGM noticed that learning experience in engineering field requires explorative activities, and that it is impossible for the team to fulfill that requirement by themselves. Therefore, digital learning must be able to provide means for accessing diverse learning resources, even to those outside of the physical reach. According to Priyambodo (2005), in order for the digital learning to be successful, support is needed in the form of infrastructure management, content creators, content developers, application software developers, training, and regulations. Overall, the support requirement indicates clearly that the implementation of digital learning requires the paradigm change of instructional activities and the overall system of education at UGM.

3.4. E-learning Development Experience at University of Padjadjaran

The development of e-learning initiatives in Universitas Padjadjaran is started based on the effort of Universitas Padjadjaran in achieving its mission to effectively and efficiently manage the process of education, research, and public services to support the students in achieving the vision and also to be nationally as well as globally recognized. To realize the mission, Universitas Padjadjaran makes concerted effort, among others, to increase the quality of its academic and administrative staff. E-learning is perceived to be one strategy in increasing the quality of its academic discourse.
Universitas Padjadjaran believes that e-learning will increase flexibility in teaching and learning, enhance communication opportunities, provide wide access to a rich and diverse range of resources for students, be able to create more authentic learning situations, enhance students interaction with course content, provide timely and efficient feedback, facilitate a range of student learning styles and approaches, enhance course management, provide opportunity for re-personalizing education, and provide a tremendous opportunity for faculty members to be involved in continuing professional development effort.

The initiative was started in 2003 through a series of seminar and workshop to design the map of UNPAD Network. The infrastructure development took place for two years from 2003-2005, including acquisition of server, network, PCs, and application programs (software). Training for administrators, lecturers, and helpdesks was conducted during 2004-2005. Socialization of the e-learning initiative has been done since 2004 up to present, for UNPAD as well as for other higher education institution. Some teleconferences are conducted under the scheme of this e-learning initiative since September 2004. In the year of 2004, the adoption of e-learning by lecturers was accelerated by the provision of teaching grants, and rewards for best e-learning course. Starting 2005, UNPAD is developing e-learning community, supported by the University of Utrecht for the overall project, Open University of Malaysia for content and multimedia development, and Universitas Muhammadiyah Yogyakarta to share expertise and develop the knowledge network.

In general, the e-learning initiative in UNPAD employs a blended learning environment, where traditional teaching approaches (face-to-face classroom learning activities) are blended with the learning technology (internet information and communication technology). The training for lecturers has involved 207 lecturers, and produced 75 graduate level courses in e-learning format. For its e-learning initiative, UNPAD selects WebCT and employs it fully as its learning management system. Although there were problems faced by students, lecturers, and system designers, UNPAD is taking e-learning initiative seriously, and expects to widen its operation to collaborate with other universities in making an e-learning community, to develop e-learning research and development, and further to develop e-learning for government, corporate, as well as private sector (E-learning Team, 2005).

4. Remarks

With the development of ICT and its influence both toward face-to-face education and also distance learning, e-learning is perceived to be a popular alternative learning system discussed in many occasions by many higher education institutions. The ultimate goal of e-learning initiatives is to take advantage of the advancement of ICT to improve student learning. The initiative on e-learning requires a correct approach and support at the universitywide scale. In addition to the issue of the ICT – hardware, software, infrastructure (connectivity, etc.), human factor has been identified the most notable element required for building the e-learning initiatives. Most users (mostly students) show their eagerness in using the e-learning for instructional purposes (teaching as well as learning). From the surveys conducted by UI, ITB, and UNPAD, it was clear that the students perceived their e-
learning experience was novel and challenging. Nevertheless, from the perspective of the developers, i.e., faculty members, the work of transforming their courses into e-learning courses was perceived extra workload which required extra (new) skills, and extra time spent. Further, the lack of skills has led to the transfer for all face-to-face and printed materials into mere electronic files. Faculty members assume that when they have their materials in electronic files ready for students, then learning will take place automatically. Thus, the emerging new roles and responsibilities of faculty members in preparing, maintaining, and carrying out the e-learning process, while keeping up with the existing teaching and learning responsibilities is a tough challenge for faculty members.

From the reports, it is also clear that the lack of ICT skills and literacy, or ICT culture has been the main obstacle faced by the users (students, lecturers, administrators) and the course developers. For e-learning initiative to work, both faculty members and students, even administrators, must view ICT in a positive manner, be comfortable with the technology, and use it effectively. Even faculty members and students who hold positive attitudes toward technology may have difficulty transferring these attitudes into productive actions, when the system in the university does not provide enough support for them to do the exploration. Further, their personal concerns (i.e., difficulties in developing their e-course, technical difficulties, etc.) must be attended to through adequate and personal support. A huge amount of money placed to technological development alone will be in vain unless considerable attention paid to assisting faculty members and students make the transition into a technology rich learning environment.

Most e-learning initiatives in Indonesia at present are at the developmental stage. Critical mass must be further developed, and the system must also be furthered explored and research. Thus far, the focus of the initiatives have been on the technology, the what (courses) in e-learning format, and the source (from whom: lecturers) of e-learning courses. Further down the road, the shift of focus is necessary, i.e., to focus on how learning is gained, rather than on what and from whom by what technology. Kaur (2006) stated that with e-learning, we are not just introducing new technology for learning; we are introducing a new way to think about learning. Moreover, the new system usually makes war against the old existing system. It competes with for time, attention, money, prestige, and a worldview.

Nevertheless, the e-learning initiatives have indeed held the potential of widening access to higher education. At present, quality education offered by UI, ITB, UGM, and UNPAD are available at the click of the students’ finger at ICT and the net across time and space. Combined with availability of quality education services offered via distance education by Universitas Terbuka, the initiatives are very promising in increasing the participation rate of higher education students all over Indonesia. It is expected that further, some other higher education institutions will take part in this e-learning initiatives, to open up more access to quality education in Indonesia, as well as other parts of the regions.
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Abstract

Costing distance-education programmes is a key aspect of capacity building in many parts of the world. This paper reports on a research and development project to produce a new costing tool for Distance, Flexible and ICT-based Education (DFICTE) for teacher development in Sub-Saharan Africa along with its associated support documentation. Working with case study institutions in Ghana, Nigeria, Senegal, South Africa and Tanzania, programme cost data were collected and systematised to create examples for a computer-based costing tool that enables those interested in introducing DFICTE to model their proposal at either the macro level (such as staff in ministries or NGO field officers) or more detailed micro level (such as would be required for a particular institution). Using a research framework of semi-structured interviews and detailed document analyses, the case studies followed a common format of questions and key points to construct a database of DFICTE costs for five teacher education programmes which users of the costing tool can draw on for illustrative example figures. The developed case studies are also presented with supplementary planning information in both English and French. The research revealed the following key issues: many programmes consist of a large number of very small courses; each small course is assessed by a range of methods sometimes leading to a costly and heavy overall assessment burden on the participating teachers; tracking of a participating teacher’s progress is often difficult as teachers take study breaks making the collection of fees and the projection of income and expenditure problematic.

Keywords: Costing, Teacher Education, Case Studies, Software Tool
1. **Introduction**

Sub-Saharan Africa is one of the regions where the knowledge gap between North and South takes on its most dramatic character. *(UNESCO, 2002)*

Sub-Saharan Africa is one of the most educationally challenged parts of the world. The number of primary school-age children in the region grew from over 82 million in 1990 to 106 million by 2000. It is projected to rise to 139 million by 2015 *(UNESCO, 2000)*. Teacher education is vital to the economic well being and political stability yet Lewin *(2002)* in a study of teacher education policy and practice in low income countries has demonstrated the growing imbalance between the output of trained teachers and the demands as primary provision is expanded.

In this context the benefits of open and distance teacher education are clear. For example:

1.1 **Learning in Context**

Conventional face-to-face in-service teacher education programmes require a teacher to travel to a centre for a particular event, at a time that may not suit them and is unable to take account of their motivation for learning on that particular occasion. The learning takes place outside the school context and so the teacher is expected to do much of the transformation and application of the centre-based learning experience to match their own particular school circumstance. Through supported ODL, however, the classroom itself becomes the site of learning. A survey in the USA *(US Department of Education, 1999)* found that many teachers believed that job-embedded, collaborative professional development activities are better for a teacher’s professional development than the more traditional forms of development strategies. This is mirrored in an evaluation of teacher professional development in England which reported that ‘the narrow perception that professional development always involves off-site activity, such as attendance at a course hosted by the LEA, is gradually being replaced by a wider and more comprehensive view of continuing professional development.’ *(Ofsted 2002, p11)*

1.2 **Self-Motivation**

Centres of face-to-face education and training are often a considerable distance as well as offering very different environments for teaching and learning from rural school settings. ODL enables a teacher to fit in their study around their working and family life while staying within and drawing from their home community.

1.3 **Self-Pacing**

A student following an ODL course can pace their own study according to their particular needs and, if a range of resources are used, according to the way they prefer to study.

The cost and other advantages of collaborative programmes across countries are plain and the increasing availability of information and communications technologies through the new ‘open content’ movement make
such initiatives possible, moving from Open and Distance Learning (ODL) to Distance, Flexible and ICT-based Education (DFICTE). The UK Open University, for example, is to make almost a fifth of its courses available free online by 2009 and the TESSA (Teacher Education in Sub-Saharan Africa) project is collaborating with teacher education institutions in a number of countries to develop free materials that can be integrated into teacher education courses. See http://www.tessaprogramme.org/

However, ‘Sadly – despite many claims to the contrary – sound and rigorous financial planning is often omitted in new projects and institutions seeking to harness the potential of distance-education methods’ (Butcher and Roberts, 2004, p. 224)

This paper describes a research and development project to produce a software tool to aid capacity building and address the weak attention to the costs of DFICTE identified by Butcher and Roberts. The project looked at five cases of ODL teacher education projects in Ghana, Nigeria, Senegal, South Africa and Tanzania. Each case highlights useful indicative data in different contexts and which has been pre-loaded into the software costing tool to facilitate the cost evaluation of similar projects. Taken together the costing case studies illustrate:

• examples taken from each of Southern, East and West Africa including both Anglophone and Francophone education systems;

• issues affecting both single and dual mode institutions;

• issues in which national implications can be drawn from their involvement in ODL.

To provide as much rich data as possible, all institutions demonstrated:

• current engagement on a range of established Open and Distance Learning contexts and approaches;

• a focus on initial/upgrading teacher training programmes that include formal assessment systems;

• local support systems in their teacher training programmes;

• an awareness of possible ICT developments in teacher education.

To structure this paper, a description of the research methodology which fed into the development of a software costing tool is described, followed by a table of some indicative results, then an explanation of the structure of the software tool, and finally some common costing issues which were revealed across the cases are discussed in a conclusion.

2. Research Methodology

Site visits were made to the following institutions to obtain cost data for their ODL teacher education programmes:

• Ghana - University of Education, Winneba.
• Nigeria - National Teachers Institute, Kaduna.
• Senegal - Ecole Normale Superieure, UCAD, Dakar,
The following key questions were explored with the academic and administrative teams in each case:

A  How many students is it proposed to train and over what timescale, and how do they progress through programme?

B  What are the costs associated with each sub-component of the programme?
   B1  What are the elements of the central programme team and how much do each element (including recruitment/registration element) cost?
   B2  What are the resource elements that have been developed, and how much does each element cost (to include updating plans and distribution costs)?
   B3  What are the support elements and how much do each cost?
   B4  What are the assessment elements and how much do each cost?
   B5  What are the quality assurance and evaluation elements and how much do each cost?

B1 and 2 needed to be separated in terms of development and operational phases.

C  What is the overall cost per cohort? What proportion of the overall budget is represented by B1–5?

D  Is the overall cost per student ‘within budget’? If not, which elements B1-5 will require adjustment?

E  How are overheads calculated?

F  How is it anticipated the programme will be funded?

To answer these questions, as far as was possible, the team worked in a collaborative way with the staff from each institution by analysing interviews, documents and synthesising information from a range of formal and informal sources. In many cases, this was the first time such information had been gathered together.

3. **Results**

The combined result of the analysis of the costing data is shown in Table 1. These data are collected directly from the collaborating institutions or inferred from other information which they supplied in late autumn 2004.
4. **Structure of the Software Costing Tool**

The software costing tool is intended for two possible audiences, those who are working at a macro policy level and are interested in a broad-brush calculation of the possible costs of a potential DFICTE teacher education programme (such as staff in ministries or NGO field officers) and those who might be working in an institution who require a much more detailed cost analysis. The data input to the costing tool is constructed around the collection of information answering the following questions asked of the user and help is supplied by a costing tool tutorial to help users in their decision making:

1. **Would you like to do an outline or detailed costing?**
   The tool takes the user down two possible routes: an outline for a policy maker or a detailed route for someone planning to introduce a new programme in an institution.

2. **What is the shape of the programme and what elements make it up?**
   Data required here would be the number of potential student-teachers taking the programme and linked to what they do on the programme so the tool required inputs of:
   - What **learning resources** elements will be developed and distributed and at what cost?
   - What **trainee support** elements are planned and at what cost?
   - What **assessment and QA** elements are planned and at what cost?
   - What **programme resources** management and administration elements are planned in development and presentation and at what cost?
   - What **income** elements are planned and how much will each generate?

3. **Where will you find the data you need?**
   A user is able to go to data from the five case studies and select the nearest to their situation, or they may enter data that they know or is available easily locally.

4. **What are the cost profiles of distance teacher education programmes?**
   Costs will either be:
   - related to the number of trainees on a programme (**variable costs**) e.g. trainee support and assessment elements. The cost per trainee will remain constant regardless of the number of trainees – for each trainee recruited, additional support and assessment activity will take place; or
Table 1 – Table showing comparative cost data results from five case study institutions

These case study costing data are based on information provided in October and November 2004. Each case study gives an overall view of the cost structures for the programme and then extrapolates from a snapshot in time. It is not a detailed representation of the programme.

<table>
<thead>
<tr>
<th>Case Study</th>
<th>Programme Level</th>
<th>Trainee Numbers</th>
<th>Programme Development Est. Costs ($)</th>
<th>Presentation Costs per Trainee ($)</th>
<th>Presentation Costs per Trainee (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1: University of Fort Hare (in Eastern Cape Province of South Africa)</td>
<td>Primary B. Ed Distance Education Primary level &amp; in-service 4 years</td>
<td>Enrolled to date: 1,950</td>
<td>900,000</td>
<td>250</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enrolled annually: 400</td>
<td></td>
<td>500</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Graduates to date: 1,500</td>
<td></td>
<td>250</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>Above is total over 5 annual cohorts of programme life</strong></td>
<td></td>
<td>4,200</td>
<td>80%</td>
</tr>
<tr>
<td>2: Open University of Tanzania</td>
<td>B.Sc. with Education Secondary level &amp; in-service 6 to 8 years</td>
<td>Enrolled to date: 800</td>
<td>450,000</td>
<td>150</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Enrolled annually: 100</td>
<td></td>
<td>300</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Graduates to date: 26</td>
<td></td>
<td>750</td>
<td>25%</td>
</tr>
<tr>
<td></td>
<td></td>
<td><strong>1,600 trainees projected over 16 annual cohorts of programme life</strong></td>
<td></td>
<td>1,800</td>
<td>60%</td>
</tr>
<tr>
<td>Program</td>
<td>Institution</td>
<td>Level &amp; In-service</td>
<td>enrollments</td>
<td>Total Program Costs</td>
<td>Program Duration</td>
</tr>
<tr>
<td>---------</td>
<td>-------------</td>
<td>--------------------</td>
<td>-------------</td>
<td>--------------------</td>
<td>-----------------</td>
</tr>
<tr>
<td>3: University of Education, Winneba (in Ghana)</td>
<td>Diploma in Basic Education Primary level &amp; in-service 3 years</td>
<td>5,400</td>
<td>350,000</td>
<td>25</td>
<td>10%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,800</td>
<td></td>
<td>50</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>1,600 (est.)</td>
<td></td>
<td>125</td>
<td>40%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>65,000 trainees projected over 10 annual cohorts of programme life</td>
<td></td>
<td>100</td>
<td>35%</td>
</tr>
<tr>
<td>4: Ecole Normale Superieure (in Senegal)</td>
<td>Upgrading Teacher Training Secondary level &amp; in-service 1 to 2 years</td>
<td>2,500</td>
<td>400,000</td>
<td>25</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>800</td>
<td></td>
<td>150</td>
<td>35%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>2,100</td>
<td></td>
<td>25</td>
<td>5%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Above is total over 3 annual cohorts of programme life</td>
<td></td>
<td>250</td>
<td>55%</td>
</tr>
<tr>
<td>5: National Teachers' Institute (in Nigeria)</td>
<td>Nigerian Certificate in Education Primary level &amp; in-service 4 to 5 years</td>
<td>175,000</td>
<td>1,400,000</td>
<td>75</td>
<td>15%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>24,000 (in 2004)</td>
<td></td>
<td>150</td>
<td>30%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>62,000</td>
<td></td>
<td>100</td>
<td>20%</td>
</tr>
<tr>
<td></td>
<td></td>
<td>381,000 trainees projected over 19 annual cohorts of programme life</td>
<td></td>
<td>175</td>
<td>35%</td>
</tr>
</tbody>
</table>
independent of the number of trainees (fixed costs) e.g. development of learning resources. These costs are likely to be high even if few (or no) trainees enrol – however, as more trainees are recruited, the cost per trainee will fall as more trainees use the learning resources already in place.

Due to the significance of fixed costs in distance education, distance teacher education programmes are characterised by economies of scale, so that the cost per trainee falls as the number of trainees increases. This means that small distance education programmes are generally less cost-effective than their conventional counterparts, whereas large-scale distance education programmes can deliver significant financial and other benefits compared to their conventional counterparts.

5. Conclusion

The different case study institutions work in a variety of contexts but they face some common issues and dilemmas. ODL institutions exist alongside conventional provision and are keen to be seen just as academically respectable as other institutions or as their face-to-face versions if a dual mode operates. A number of the costing study institutions make choices within this political environment which has implications for the cost of the quality assurance (QA) of the programme, the structure, assessment regime and length of the teacher education programmes and the consequent completion rate.

The costs associated with the programmes have been analysed in terms of the percentage of income spent on elements such as

- Core Team
- Learning resources
- Student support
- Assessment
- QA and Evaluation

and the relative weighting of the different elements highlight some interesting issues.

In discussing costs with staff in the different institutions one returns time and again to the balance between effectiveness and efficiency. The need to reduce costs and to train as many teachers as possible given the acute problem is plain; ODL teacher education must be cost efficient. But to provide a quality training, it must be cost effective and so decisions have to be made as to the balance that should exists and the trade-offs that need to be made between, for example, quality learning resources and frequency and location of student support. Here some specific conclusions are from the costing case studies. Often the issues are inter-related.

5.1 Programme Content

Some programmes consist of a large number of small courses. It is not unusual for a three-year programme to consist of up to thirty courses which has an impact on work-load and course completion. A rule-of-thumb which equates
two years of ODL study to one year of face-to-face also sometimes makes the training period very long. Five to six years is common and sometimes the period from initial training to the award of a Bed is 11 years. Due to personal, financial and professional reasons, trainee teachers often have to take a study break which further lengthens the time to train.

5.2 Amount of Assessment
Small courses have to be assessed and this has an effect on assessment costs. In a number of institutions, assessment accounts for about 40% of costs. Other institutions are able assess the student teachers at half of that proportion. In many cases the desire to assess so much is linked to checking on ODL students being 'equivalent' to those trained through more conventional provision. A further cost factor associated with assessment is the level of personnel who marks scripts. Sometimes this is done only by core University academics, rather than contract staff which is expensive and often introduces very lengthy delays in providing results and feedback to students.

5.3 Training in using new technologies
The costs associated with up-skilling in the use of new technologies manifest themselves in a number of ways. There are the straightforward costs associated with the introduction of new (usually desk-top) computers. However, a more hidden cost is the expensive use of academic staff to re-key and amend DFICTE learning resources as other staff are not sufficiently trained in either word processing or data manipulation. The latter problem leads to less than accurate recording.

5.4 Tracking of students
To give an accurate cost-benefit analysis of DFICTE methods for training teachers it is necessary to be clear who is enrolled on a programme, who is taking a study break, who has withdrawn and who has graduated. Tracking of teachers in training at these different statuses is very difficult. At the UK Open University, an initial teacher education course is available which can be studied in a single year or up to three years. Keeping track of students' progress, tutor marked assignments and associated school placements is difficult and requires a sophisticated data-base. In many of the case study institutions, the length of study is much longer and the associated tracking even harder. In addressing this issue concerns of multiple small courses, long programme times, over-assessment and training in the appropriate use of new technologies combine. Given the complexities of the programmes and the large numbers of intending teachers, efficient and cost-effective use of ICTs is the only solution.

5.5 Constrained Government Budgets
Butcher and Roberts (2004 p. 225) notes 'innovation in distance education relies heavily on unsustainable sources of funding, particularly donor funding'. In these costing studies, the difficulty in securing adequate income through student-teacher fees and government grants is a recurring theme. In many cases, the government funding has been frozen for a number of years and teachers find it difficult to fund themselves from their salary. ODL, however,
provides some opportunity for the teachers to supplement their income privately.

The range of cases presented in these costing studies give those contemplating the introduction of ODL programmes for teacher education many illustrative models and indicative costs. Experience in a number of countries, however, has indicated that what matters is the quality of teachers and schools and the impact those have on pupil learning.

[...] the bricks and mortar institutions of teacher education created to meet the needs of the twentieth century will be insufficient to meet the needs of the present century. Existing such institutions will have a role. But it will change. The emphasis must move to school based rather than college based training solutions [...]. Moon (2004)

References


Fostering e-learning in medical education: the EuroVacc team experience

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Theme: The value of Distance, Flexible and ICT-based Education in specific contexts

Context: II - Post-Secondary or University Education

This work focuses on the approach of the EuroVacc e-learning core-team, an interdisciplinary workgroup dedicated to the development of e-learning projects in the medical fields. The group is running three major projects: Immunology Online (IOL), OCTAVE (Online Collaborative Training for AIDS Vaccine Evaluation) and OOL (Oncology Online). IOL is a web-based curriculum that draws expertise from the five Swiss medical faculties and targets medical and graduate students. IOL employs a “blended learning” strategy (face-to-face and e-learning) as an alternative to traditional lectures. OCTAVE is a pilot e-learning program initiated by EuroVacc and the HIV Vaccine Trials Network to deliver training in priority areas such as good clinical and laboratory practices, HIV pathogenesis and vaccinology. OCTAVE targets the need for on-site, face-to-face training visits (i.e. training in laboratory methods). Oncology Online aims at integrating clinical and molecular aspects of cancer. IOL, OCTAVE and OOL are hosted by the Bio-med platform (www.bio-med.ch) of the Swiss Virtual Campus program. The platform scaffolds a Learning Management System for creation, updating, revision and delivery of web content. It supports an active and flexible e-learning environment, tailored to the needs of a diverse clientele. Our approach has been tested in multiple contexts, namely problem based
learning, article based learning, lectures and, more recently, protocol-based learning. Each project counts with the commitment of experts from a variety of collaborating organizations, whom provide relevant material in basic and applied biomedical sciences.

Keywords: e-Learning, medical education, learning management system, development, application.

1. Introduction

During the last decade, internet-based learning has been introduced as a way to renew teaching and enhance a variety of learning experiences. University educators have been applying e-learning as a way to enhance the teaching of several disciplines. They rely on the unique combination of teaching and learning resources that can be exploited in e-learning environments, some of which are listed bellow:

- **accessibility**: e-learning is not limited by the physical proximity of a student to an individual teacher or institution. The Internet offers the potential to expand access to a global panel of experts and fosters collaboration with other students from different cultural backgrounds or work environments. In this sense, e-learning has the potential to reduce the disparities among individuals or groups of students, while promoting independent learning (Semenov, 2005);

- **dynamic representation of concepts through hypermedia**: by combining and linking text, animations, video and simulations, hypermedia provides a resourceful and engaging medium that may facilitate understanding of complex concepts that were traditionally conveyed in static diagrams. (Tricot et al., 2000; Kozma, 2003);

- **communication**: information and communication technologies (ICT) have evolved to support teaching methods that complement or, when feasible, supplant traditional face-to-face modes of instruction. Classical ITC tools such as e-mail and chat sessions have enabled new interaction avenues between teachers and students worldwide. These tools have proved to facilitate communication, for instance, by allowing students to pose questions that they might be uncomfortable to ask in a classroom setting, particularly if they feel challenged by material they perceive others to have mastered (Semenov, 2005);

- **autonomous learning**: in times of a ever-growing wealth of information, it became a consensus that students are demanding greater flexibility in how and when they prepare for classes. This is particularly true for the training of students and for the objectives of continuing education. E-learning have been acknowledged as an effective approach to run life-long learning programs (UNESCO-ILO, 2002).

However, the successfully implementation of e-learning is nevertheless a challenging entrepreneurship. For the purposes of the present discussion, it is convenient to point out four major challenges:
changing current views of teaching and learning: the age of knowledge and information poses a challenging background for those engaged in any instructional activity. Given the impossibility of conveying and updating the whole of the information, educational objectives should focus on selectivity rather than on completion. It prompts a structural change in curricula and in the current views of those who teach, and those who learn. On one hand, such change is crucial to successfully implementing e-learning. On the other hand, it is by applying e-learning and demonstrating its effectiveness that one can subdue inertial scepticism and foster the change;

heterogeneous audience: teaching and learning for selectivity is tightly bound to teaching and learning for life, i.e., preparing students to autonomously identifying their learning goal and digging out relevant information from the wealth of available sources. Consequently, the potential audience of training programs overrun the capabilities of the current educational system. All professionals are expected to enrol in continuing education programs, often in fields of expertise different from the original formation (European Parliament and the Council of the European Union, 2003). The case of health education precisely illustrates the dimension of this challenge. As will be discussed later in this article, lowering the death row of diseases such as AIDS is heavily dependent on training a clientele of professionals which is increasingly diverse regarding access to technology, geographical distribution, age, motivation, previous knowledge, and socio-economical, cultural, and linguistic assets (Davis et al., 2004);

flexibility: facing the challenges outlined above requires a flexible environment that can be tailored to different audiences. It must also address strategies adopted by educators that will eventually incorporate e-learning in their praxis. Thus, the e-learning environment should be conceived and developed to provide innovative solutions for the several teaching and learning strategies currently adopted (lectures, problem based learning, case based learning, etc). Additionally, it must handle the myriad of learning possibilities regarding place (face to face/blended/distant) and time (synchronous/asynchronous). Flexibility is, therefore, a solution and a challenge in itself;

development and maintenance: the promise of increased accessibility and innovation through e-learning comes at a cost: development and maintenance require considerable institutional resources to support expertise in information technology and to engage faculty members, who might have limited experience in teaching online.

This work reports the activities of the EuroVacc e-Learning Core Team and its strategies to cope with the challenges outlined above. It focuses the team's major achievements and presents its framework for development and application of e-learning in medical and health sciences education.

2. e-Learning programs in medical and health sciences

The EuroVacc e-Learning Core Team is the e-learning branch of the EuroVacc Foundation, a Swiss Foundation based in Lausanne. The Core Team in Lausanne participates since 2004 in the creation of distant learning programs in collaboration with national and international organizations and institutions. The
team is mainly concerned with the development and application of e-Learning in biomedical and health science education as follows:

- **Development activities**: starting from content provided by experts in several fields of biomedical sciences, the Core Team develops interactive content modules combining hypertext, illustrations, animations and videos for each of its e-learning programs. In order to take the most of the content, specific learning tools have also been developed, enabling a broad array of applications. The modules and the learning tools are hosted in a platform specially designed to scaffold content development and application;

- **Application activities**: the application of e-Learning programs is driven by institutional needs. The experience accumulated so far resulted in the development of e-teaching approaches for various audiences including academic and industrial organizations in the developing and developed countries. The application of e-learning programs in each institution is based on portals created to allow customization of content and access for specific educational goals. The portals and their resources are also hosted in the same platform used for development.

Efforts are being pursued by the Core Team in partnership with other national and international institutions to develop biomedical on-line training. The efforts resulted so far in three ongoing programs: Oncology Online (OOL - http://ool.bio-med.ch), Immunology Online (IOL - http://iol.bio-med.ch) and OCTAVE (http://octave.bio-med.ch).

### 2.1 Oncology Online

Oncology Online is intended for medical students, graduate students, post-doctoral fellows, residents, and clinical fellows. The e-Learning Core Team in joint effort with Oncology-oriented scientists and clinicians is developing an integrated teaching program combining molecular and clinical oncology. The program will initially be implemented at the School of Medicine, University of Lausanne and subsequently proposed to the other Swiss and international Higher Education organizations.
OOL share a central objective with IOL and OCTAVE: integrate concepts of clinical and basic science within the medical and health science education. From the content development side, this objective is addressed by adopting an integrative matrix. The matrix correlates the conceptual frameworks of clinical and basic sciences and their insertion across the curricula (Figure 1).

Molecular oncology consists of 7 modules entailing 32 major topics. This outline serves as the architecture of molecular oncology, it determines content development and it will direct the students to the appropriate online resources. Given the applied nature of its content, clinical oncology is structured through a collection of clinical cases regarding the most common types of tumors. Whenever it is pertinent, clinical cases are developed along the following lines: genetic and environmental predisposing factors; pathological and cellular characteristics; molecular basis (activation of oncogenes, loss of tumor suppressor genes, etc.); clinical evolution and available therapeutic interventions.

Consistent with the principle of integrated curriculum, Molecular and Clinical Oncology are developed by workgroups composed of specialists from both clinical (applied) and basic sciences focusing on one type of tumor. The first workgroup has developed a problem based approach related to breast cancer. This integrated framework will later be extended to other cancer types such as colon, lung cervix cancers, melanoma and leukemia and lymphoma.

The development of Oncology Online content illustrates a common principle that also drives content development in IOL and OCTAVE: interdisciplinary

![Figure 1: Integrative matrix adopted in the integration of Molecular and Clinical Oncology in the medical curriculum.](image)

![Figure 2: flow of information and the role of the partners in the development of OOL and the other projects run by the EuroVacc e-Learning Core Team.](image)
cooperation among scientific contributors and the e-Learning Core Team. Following this principle, information flows from the original materials provided by the contributors to the web environment. The process is orchestrated by the coordinator of each project, who bridges the knowledge of the contributors and the expertise of the e-Learning Core Team in order to create, revise and publish the content in OOL's, IOL's and OCTAVE's web environments (Figure 2).

Such cooperative work yields quality instructional hypermedia and e-Learning tools, tailored to active teaching strategies such as Problem Based Learning (PBL), as shown in figure 3.

Figure 3: interactive hypermedia in a content page (A) and in a web-learning tool designed for Problem Based Learning (PBL) sessions (B) on breast cancer.
2.2 Immunology online

Immunology has often had the reputation of being complex and daunting among medical & biology students. This is mainly attributed to the fact that the knowledge on the immune system is continuously evolving and is teeming with details and a several unanswered questions. Additionally, much of the coursework in basic and clinical immunology at the university level relies heavily on content-centered traditional approaches to learning, in which updates to textbooks and curricula often lag behind rapid scientific advances and, in which, course content is revised on an annual, or less frequent, basis. Moreover, it was increasingly recognized that students are demanding greater flexibility in how and when they prepare for classes of immunology and related disciplines. In response to these challenges and to fulfil the desire to standardize learning opportunities across seven Swiss campuses, Immunology Online was launched as part of the Swiss Virtual Campus in 2001.

Immunology Online is a web-based immunology course for students of immunology at the bachelor, masters, and doctoral levels. Immunology Online offers a complete course that is used in conjunction with existing traditional immunology courses. IOL’s content is broad and entails 6 modules on basic and 8 modules on clinical immunology. IOL’s comprehensive content is accessible by means of three distinct learning gateways:

- "Structure-function" approach: the “structure–function” approach makes use of high-quality hypermedia to provide an in-depth exploration of the structural organization of lymphoid organs and their respective roles in the development of an immune response.
- Case-based learning (CBL): clinical CBL encourages small groups of students to analyse and explain relevant immunological principles. As students proceed through a case study, an Internet-based application assists them in identifying gaps in their knowledge and defining their learning objectives. The present version of the Internet-based application has benefited from feedback from educational experts, and it continues to undergo improvements;
- Annotated article-based learning (ABL): ABL offers an opportunity for students to familiarize themselves with the content and format of original scientific publications. Various tools have been created to help students to read and interpret the literature. These include the following: guidelines for reading, evaluating and presenting the findings of an article; active links to specific pages of laboratory techniques or other relevant contents; and an extensive glossary of terms. This method of learning is particularly valuable for students who are planning careers in basic or clinical research since it helps them to build lifelong learning skills and promotes greater insight into the design of experimental procedures.

IOL program was initially conceived for Swiss students; however, through a collaboration with the World Health Organization, content will also be shared with medical students and healthcare personnel of developing countries in Africa, Asia, and South America.
2.3 OCTAVE: Online Collaborative Training for AIDS Vaccine Evaluation

Significant resources have been committed by trial sponsors and governments to facilitate technology transfer to developing world investigators and laboratory specialists. In-country and international fellowship programs and research internships are important components of this effort. However, evolving technology presents another solution to offer practical training to key personnel in geographically diverse locales. Distance education using the Internet has been successfully implemented to train service providers to offer tailored HIV prevention interventions, and similarly, it is believed that e-Learning approaches can be built and maintained to support staff dedicated to moving the HIV vaccine development effort forward.

To support this essential capacity building effort, The EuroVacc Foundation, the HIV Vaccine Trials Network (HVTN), supported by the U.S. National Institutes of Allergy and Infectious Diseases (NIAID) and other partner institutions have spearheaded OCTAVE, a new on-line training program. Contributing authors representing a wide array of collaborating organizations and industry partners will provide relevant content for use by a diverse audience of investigators and support staff.

OCTAVE addresses key training priorities including Good Clinical Practices (GCP), Good Clinical Laboratory Practices (GCLP) and laboratory methodologies, vaccinology, and HIV immunopathogenesis. This pilot program was initiated in the fourth quarter of 2004 and piloting modules of the vaccinology, GCP and laboratory methodology training have started in 2006 (Debard et al., 2005).

GCP training relies on article and case-based learning to clarify investigator responsibilities outlined in regulatory guidance from the International Conference on Harmonization (ICH) and U.S. Code of Federal Regulations. Vaccinology training will employ self-directed and tutor-assisted case-based instruction to help investigators synthesize pre-clinical safety and immunogenicity data to build a rationale for moving a hypothetical candidate HIV vaccine into clinical trials. This training will be also be informed by relevant background contributed by subject experts in HIV immunopathogenesis.

The laboratory assays and methodology section of the site will encourage users to enter a virtual laboratory and assume the role of a technician, investigator, or member of the quality assurance team. Students will choose to enter different areas of the lab to learn more about flow cytometry, peripheral blood mononuclear cell (PBMC) processing, and HIV diagnostics, among other topics. It is hoped that this web-based resource will be used to help prepare staff for upcoming, on-site training visits by trial sponsors and to reinforce key messages and techniques thereafter when clinical sites are expected to perform these functions autonomously.
3. Tailoring e-learning for specific audiences

The core team is providing portals that allow adjustment of the content and the pedagogical approaches of the various e-Learning programs to the specific needs of Institutions and Organizations. The portals provide:

- A plastic e-Teaching management system that is controlled directly by a given institution or organization and which can easily be interfaced with existing teaching activities and adapted to various audiences;
- A rapid mobilization of the content and pedagogical approaches across different e-Learning programs to build a adapted curriculum;
- Multiple sessions management capabilities that allow to organise simultaneously distinct training activities and a follow up of teaching activities over long periods particularly suited for continuing education.

Several portals have been implemented and are operational. These include:

- The WHO portal: The WHO portal has been designed for the trainees of the WHO/TDR program supported by the Swiss Office for Cooperation and Development. The portal gives access to content of Immunology Online and OCTAVE directly related to the course on immunology, vaccinology and biotechnonology of infectious diseases. The trainees receive their login two month before the face to face courses in Lausanne or in developing countries, are asked to acquire the basic concepts of immunology and pass an online pre-test.
- The UNIL portal: The UNIL portal is for the medical and biology students of the Faculty of Biology and Medicine of the University of Lausanne. It offers integrated teaching programs on Immunology and Oncology. It gives access to problem based and article based learning approaches adjusted for each year. The students have access to virtual tools including a virtual microscope developed by the University of Geneva and to a virtual laboratory.
- The EPFL portal: the EPFL portal is for bachelor and master students at the Federal School of Technology in Lausanne. It provides a combined training in immunology and microbiology. It serves also for a master devoted to the modelling of the immune system.
- The HVTN portal: the HVTN portal has been designed for the training of clinical investigators

4. Scaffolding e-Learning with the Biomed platform

The ability of the Internet to foster an integrated approach to learning depends, in part, on the technological capacity of the platform that is used. The Biomed platform embeds a learning management system (LMS) developed by the Core Team. The LMS hosts the three e-Learning programs and the four portals, allowing adjustment of the content for specific audiences. Besides, the LMS system provides utilities for the key actors involved in e-Learning:

- The learner: a personalized folder, annotations, self evaluation tools in the form of quizzes, handouts, glossary, Q&A and FAQ;
- Groups of learners: "who is online?" tool, Forum;
- Teachers and tutors: mailing, group management, agenda, news, statistics, follow up of evaluations
The LMS enables instructors or online tutors to organize content in a range of ways. Students can complete the required elements in a time frame that is compatible with the guidelines of each institution. It can help both the instructor and the student to keep track of progress, which ensures that students advances in their exploration of the knowledge data base according to the educational objectives set by the teaching staff. In addition to scaffolding the LMS, the Biomed platform supports all phases of e-Learning process from development to testing and implementation. Used by Oncology Online, Immunology Online and the OCTAVE project, the platform provides operational means for development, storage and access of instructional hypermedia.

5. Perspectives

e-Learning programs such as Immunology Online, Oncology Online and OCTAVE are examples of a trend in expansion across several fields of knowledge: using the Internet to deliver up-to-date educational information in an accessible user-friendly way to a broader audience. These activities, among others, are expected to foster lifelong learning for individuals who are committed to continuing to build their skills in response to a rapidly changing society. In July 2004, the European Parliament and the Council of a the European Union adopted ambitious proposals for a new generation of programmes — entitled Lifelong Learning — in the fields of education and culture, and these include an e-learning action plan. According the Council of the European Union, at least 12.5% of the adult population in working-age will enrol lifelong learning activities, of which e-learning initiatives will feature prominently, at a cost of €44 million in the next two years (European Parliament and the Council of the European Union, 2003). This stresses the stated commitment of the European Union towards an ‘advanced knowledge’ society with sustainable development, job creation and greater social cohesion.

We believe that e-learning has the potential to provide a convenient avenue to such goals. However special concern must be given to maintain high-quality standards while expanding the action fields of e-learning programs. This is certainly another challenge that e-learning developers must face, and a central objective to pursue in current and further e-learning projects.

6. References


Acknowledgements
We are grateful to the NCCR-Molecular Oncology for supporting Oncology Online, and to the EuroVacc foundation for supporting the EuroVacc e-Learning Core Team.
Many investigations show that among the potential impacts of the Information and Communication Technologies, when applied to education, include the impacts on the abilities and motivation of the teachers and on the practice in the classrooms. AME is an educational program of the Fundación Cisneros and its general objectives are 1. To give relevant educational programs to teachers in service and in pre service in Latin America, using interactive learning on line and tele-education, ensuring equality.2. To familiarize teachers with technological cultures using environments and communities of virtual and interactive teaching learning. The Program offers several short courses, which are formulated, developed, and evaluated by Latin American and Spanish universities and has developed a Web application using a database SQL Server. The process of teaching/learning and all the administrative and academic functions are through the Web page (www.ame.cisneros.org). AME is currently in nine (9) Latin American and Caribbean countries. Among the impacts and results are the formation, training, didactic improvement, social learning and work through projects in class, schools and communities. Since 2003, 1,689 teachers or direct beneficiaries have approved the courses offered by AME.

Keywords: interactive learning, tele-education, upgrading teachers, AME, Fundación Cisneros.

1. The need of quality education in Latin America

Quality education should train people so they can fully develop their individual potentials in a constructive way. For education to have quality, it has to be relevant, allow more equality in the access to learning and respect for the individual rights of the students. In Latin America, the persistence of poverty and inequality has made it difficult to have a quality education.

UNESCO points out that the process happening in the classroom is one of the most important factors that influence the quality of education. This is where the curricular impact is felt, the teacher’s method and the student’s motivation to participate and learn to learn.

The quality of a teacher is very difficult to define and it does not only depend on visible indicators like the previous ones but on their behavior and the nature of their
relationships with their students. To prepare a teacher for the challenges of a changing world means to provide them with expertise of knowledge in specific areas, in effective teaching practices, in an understanding of the technology and the ability to work in groups with other teachers, with members of the community and parents.

2. Introduction of Information and Communication Technologies in the Schools

The potential impacts of the Information and Communication Technologies (ICT) when applied to education include changes in the teachers. The teachers can acquire familiarity with the computers for regular use in their professional development (e-learning, formation of virtual professional communities), management (evaluation of students and reports to parents), and in tasks done out of the classroom (searching for educational contents in the Web and the planning of lessons).

Several investigations about the introduction of the ICT in the school, the learning of ICT and their effective use in education by teachers, show that these processes are developed in four phases: 1. Discovery: administrators and teachers begin to explore the potential use of the ICT. 2. Application: the teachers start using the computer and a word processor, database and explore specific software. 3. Infusion: The ICT are used as tools and are integrated to the curricula. 4. Transformation: The major reconstruction of the classrooms is during this phase and is centered on the students and the ICT are used to explore a variety of real world problems.

The introduction of the ICT is not necessarily going to change the behavior of the teachers at the beginning but, with a good support and relevant access to the ICT, their behavior can change over time.

3. THE AME PROGRAM

AME is an educational program for teachers from the Fundación Cisneros. Its vision is to contribute to improve the quality of basic education in Latin America. Its mission is to contribute to improve the processes of teaching/learning through the strengthening of training and updating of teachers of basic education in Latin America using the Information and Communication Technologies (ICT), and tele-education.

Its main general goals are 1: Provide relevant educational programs with equity to access to teachers in service and pre service in Latin America 2: To familiarize the
teachers with the technological culture using environments of virtual and interactive teaching/learning and virtual communities of teaching/learning.


AME has developed a Web application with a SQL Server database for its program. This web is constantly updated with new tools and information. All of the processes of teaching/learning and all the administrative functions inherent to an educational process are done through its Web page (www.ame.cisneros.org). AME has also established an Organizational Manual that contains information about the functioning of the program.

The program is currently implemented in Guatemala, Costa Rica, Panama, Colombia, Venezuela, Dominican Republic, Peru and Argentina and is based on the establishment of alliances of multiple partners such that:

- The Fundación Cisneros has provided all the funds for the economic sustainability of the program; the strategic planning, the administrative support and assures its transparency and governance.
- Five universities from Spain and Venezuela generate the contents, evaluate the teachers and hand out the accreditations.
- A private television channel (Cl@se), and another one from a university, transmit the audiovisual contents non-profit.
- Local schools, public and private, rural or urban, training teachers centers, academic sectors, private Foundations (Fundación Backus in Peru), and governmental sectors provide the necessary infrastructure, the connectivity to Internet and the training in situ. Two Education Ministries directly certify the accreditations given by the universities together with the Fundación Cisneros.

Graphic Nº 1 presents the distribution of participating schools by country from 2003. In 71% of the schools, the central or local government contributes with its financing together with the community and 92% are schools whose social economic levels are medium, medium-low and low.
3,543 teachers have enrolled since 2005. (Graphic Nº 2) Since a teacher can participate in more than one course, there have been 4,983 participants. The majority of the teachers are in the application or infusion phase for the use of ICT in their formation processes even though there is a 63% with a university degree.
In the period 2003-2004, 2,170 teachers approved the courses. (Graphic N°4) In 2005, the percentage of approved teachers by course was 55.33%.
The qualitative appreciations of 205 teachers in the evaluation of the courses of the AME Program can be seen in Table Nº 1.

<table>
<thead>
<tr>
<th>Evaluation criteria of courses</th>
<th>New Technologies</th>
<th>Scholar Communication and Organization</th>
<th>Mathematics</th>
<th>Reading and Writing</th>
<th>Health Education</th>
<th>Peace Education</th>
<th>Environmental Education</th>
<th>Average</th>
</tr>
</thead>
<tbody>
<tr>
<td>Programming Quality</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>97%</td>
<td>100%</td>
<td>98%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>Quality of Support material</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>97%</td>
<td>98%</td>
<td>98%</td>
<td>78%</td>
<td>96%</td>
</tr>
<tr>
<td>Course Design</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>96%</td>
<td>98%</td>
<td>100%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>Schedules</td>
<td>65%</td>
<td>100%</td>
<td>100%</td>
<td>66%</td>
<td>93%</td>
<td>87%</td>
<td>89%</td>
<td>86%</td>
</tr>
<tr>
<td>Quality of Videos</td>
<td>67%</td>
<td>100%</td>
<td>100%</td>
<td>96%</td>
<td>98%</td>
<td>98%</td>
<td>89%</td>
<td>93%</td>
</tr>
<tr>
<td>Applicability in Classroom</td>
<td>94%</td>
<td>100%</td>
<td>100%</td>
<td>100%</td>
<td>98%</td>
<td>100%</td>
<td>100%</td>
<td>99%</td>
</tr>
<tr>
<td>Immediate applicability in Community</td>
<td>94%</td>
<td>34%</td>
<td>33%</td>
<td>54%</td>
<td>60%</td>
<td>56%</td>
<td>87%</td>
<td>60%</td>
</tr>
<tr>
<td>Average</td>
<td>89%</td>
<td>91%</td>
<td>90%</td>
<td>87%</td>
<td>92%</td>
<td>91%</td>
<td>92%</td>
<td></td>
</tr>
<tr>
<td>Sub totals</td>
<td>Fre= 18</td>
<td>Fre= 2</td>
<td>Fre= 5</td>
<td>Fre= 70</td>
<td>Fre= 47</td>
<td>Fre= 54</td>
<td>Fre= 9</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Total</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>Total 205</td>
<td></td>
</tr>
</tbody>
</table>

The percentages represent the sum of good responses, very good and excellent.

In Table Nº 2 the qualitative appreciation of the teachers of Venezuela, Dominican Republic and Peru relative to the consequences or effects of the courses and the experiences acquired through AME.
Table Nº 2 Results

<table>
<thead>
<tr>
<th>Results criteria</th>
<th>Venezuela</th>
<th>Dominican Republic</th>
<th>Peru</th>
</tr>
</thead>
<tbody>
<tr>
<td>Literary Alphabetization</td>
<td>4</td>
<td>5</td>
<td>9</td>
</tr>
<tr>
<td>Skills</td>
<td>11</td>
<td>9</td>
<td>15</td>
</tr>
<tr>
<td>Values</td>
<td>8</td>
<td>3</td>
<td>12</td>
</tr>
<tr>
<td>Social Benefits</td>
<td>13</td>
<td>15</td>
<td>20</td>
</tr>
<tr>
<td>Other</td>
<td>4</td>
<td>2</td>
<td>6</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>40</strong></td>
<td><strong>34</strong></td>
<td><strong>62</strong></td>
</tr>
</tbody>
</table>

The “other” category refers to words like “Excellent” and “Very Good”, to the motivation they have to continue and the discovery of handling the Classroom Project tools transversally.

Table Nº 3 Learning

<table>
<thead>
<tr>
<th>Type of Learning</th>
<th>Venezuela</th>
<th>Dominican Republic</th>
<th>Peru</th>
</tr>
</thead>
<tbody>
<tr>
<td>Personal</td>
<td>9</td>
<td>6</td>
<td>13</td>
</tr>
<tr>
<td>Equipment</td>
<td>8</td>
<td>13</td>
<td>12</td>
</tr>
<tr>
<td>Educational Center</td>
<td>9</td>
<td>6</td>
<td>11</td>
</tr>
<tr>
<td>Private/public</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ICT Technology Updating</td>
<td>5</td>
<td>3</td>
<td>10</td>
</tr>
<tr>
<td>All of the above</td>
<td>4</td>
<td>3</td>
<td>6</td>
</tr>
<tr>
<td>Other</td>
<td>1</td>
<td>1</td>
<td>4</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>36</strong></td>
<td><strong>32</strong></td>
<td><strong>56</strong></td>
</tr>
</tbody>
</table>
Table Nº 3 shows that AME is valued because it offers all kinds of learning. The “other” category refers to the opportunity of connecting with other countries and using videos as educational tools.

Table Nº 4 shows the different types of achievements. The category “other” highlights the use of the Classroom Projects and the fact that they learn without cost.

Table Nº 4 Achievements-Impacts

<table>
<thead>
<tr>
<th>Aspect</th>
<th>Venezuela</th>
<th>Dominican Republic</th>
<th>Peru</th>
</tr>
</thead>
<tbody>
<tr>
<td>Formation, Training, Tools, Didactic</td>
<td>12</td>
<td>11</td>
<td>10</td>
</tr>
<tr>
<td>improvement</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Social Learning, collective</td>
<td>10</td>
<td>5</td>
<td>12</td>
</tr>
<tr>
<td>achievements, equipment</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>International Projection, Latin America</td>
<td>7</td>
<td>2</td>
<td>3</td>
</tr>
<tr>
<td>Other</td>
<td>7</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Totals</strong></td>
<td><strong>36</strong></td>
<td><strong>21</strong></td>
<td><strong>30</strong></td>
</tr>
</tbody>
</table>

Lack of technological culture, connectivity, time, computers and costs to reproduce the support material are among the obstacles and limitations.

4. Bibliografía

6. UNESCO (2002). Information and Communication Technology in Education A curriculum for schools and program of teacher development. Division of Higher Education. France
ICT based learning strategies for Educating nomads

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Abstract

Nomads all over the world have a glorious past. About 6% of Indian population is nomadic. Large numbers of children never go to school. Educating nomads and settling them in alternative vocation is needed to bring them into the main stream. Much is said on this on various platforms but with very little is done in this direction.

The author and his team in collaboration with KReSIT, IIT-Bombay are trying to evolve a learning methodology for the nomadic children. This paper describes an attempt to find an “out of box” solution to the problem of educating nomads. The new, developing ICT technology provides hope to provide quality education to nomadic students within their life style, at the place of their stay and time of their choice. The author is working with four tribes in Maharashtra.

Wandering Schools were started with the following four tribes:
2. Masan Jogi: Tribes which stay near crematorium and survive on the offerings made on the dead bodies.
3. Paradhi: They are hunters. Also labeled as criminal tribes.
4. Gopal: They perform various physical exercises.

A model based on solar powered laptops for nomadic schools is being tried. Several available multimedia contents were collected and instructions are given to the students using multimedia. It is observed that a combination of educational strategies, including that of ICT’s, will be useful in educating nomads.

Some more time and work is needed to comment and describe the results and propose a model for the future. However, initial test gives assurance that efforts will bring fruit.

Key words: nomads, ICT in education, wandering school, life skills education,
1. Introduction

Nomadic people are found all over the world. They move in a caravan from place to place in order to earn their living. ‘Athapaskans’ tribes in United States, ‘Awa’ in Brazil, ‘Rom and Sami’ from Europe, ‘Baka, Bamuti’ from South Africa, ‘Chukchi’ from Russia are part of the same story[1].

The Nomadic and Denotified tribes constitute a 60 million population all over India. There are over 200 tribes of pastoral nomads (they breed and herd cattle, pig, camels and other animals), and more than 300 tribes are of non-pastoral nomads[2]. Non pastoral nomads visit the village from time to time and offer essential services such as selling utensils, medicine, provide entertainment etc. Though they were an integral part of the society in the past, there is no demand for their traditional jobs in modern society. It is necessary to give the nomads alternative skills for bringing them into the main stream of the society.

Education plays a very important role in transforming the life of nomads. Government and various organizations started boarding schools (Ashram Shala) for nomadic children. Still, large numbers of students from these tribes are out of schools for a variety of reasons.

This paper describes an attempt to find an “out of box” solution to the problem of educating nomads. The new, developing ICT technology provides hope to provide quality education to nomadic students within their life style, at the place of their stay and time of their choice.

2. Educational problems with nomads

Dr. Radhakrishnan [3] says, “If you think that poverty is the main reason for these children being out of school and working or eking out a living, by picking rags, begging or stealing, I must warn you that your thinking is the result of your tendency to look for easy escape routes to wriggle out of problem situations, without attempting to solve them”.

We must therefore try to understand problems of nomads with current educational systems.

i. Formal education system is highly academic and teacher centric. There is a huge rift between the culture of the school and that of the nomads.

ii. Those who are educated fail to get jobs. Failure of educated youth in getting jobs, is the biggest disincentive to the parents as educated unemployed youth are not ready to do traditional jobs.

iii. To stay in a boarding school, students have to live away from the parents. It is difficult for parents to keep these children away for financial reasons.

iv. Nomadic people have traditional wisdom - we need to recognize and use it in designing educational curricula for them. Our approach should be “What you know, teach; what you do not know, learn.” Present curricula lack this.
v. While educating these tribes, we need to focus beyond mere literacy and give training in life skills relevant to them.

vi. Due to social stigma attached to the children, teachers often discriminate with nomadic children, which results in increase of student drop out.

vii. Child labor is the main problem in a nomadic community. They are used for begging, performing physical exercises, cattle rearing etc. Sending children to boarding school means loss of income for parents. And when there is a daily question of survival, education always gets a back seat. Children will be allowed schooling only if they help their parents in earning their daily bread and learn in their spare time, at their residence. So there is a need of wandering schools where school will move with the nomads. We believe educating nomads is possible only through somebody from their community who stays with them in their life style and helps them to learn educational & life skills.

Some experiments were done [4] in the past to provide non formal modes of education for such disadvantaged children. But critics argue against it as parallel second class education.

Mayer’s[5-6] research shows that students ability to “transfer” information that had been presented to them in multimedia style showed “whopping 89 percent improvement in performance over traditional book-based methods”. Sugata Mitra of NIIT [7] found in his “Hole in the wall” program that children using ICT based learning, required little or no inputs from teachers and learnt on their own by the process of exploration, discovery and peer coaching.

It has been observed that ICT is proved to be an effective tool in providing uniform quality of instruction. To solve the age old problem of nomadic education, an attempt is being made to see if ICT can provide some opportunity and solution?

3. The Present Experiment

The present education system focuses more on memorization and retention skills. Students get the information but very little of this knowledge is used for application in real life situations. To effectively train nomads, emphasis must be given on the life skills. “Life skills are the skills that people need to build a sustainable livelihood and to fully participate in society”[8].

We firmly believe that nomads could be educated only and only if,

- School stays and moves with them
- Teacher is one of them
- Does not hinder earning of their daily lively hood.
- Understands their capabilities and improves on them

The author is working with four nomadic tribes in Maharashtra. A wandering school was started in February 2005 and different educational strategies are being tried out to educate the nomadic children. Wandering Schools were started with the following four tribes:
2. Masan Jogi: Tribes which stay near crematorium and survive on the offering made on the dead bodies.
3. Paradhi: They are hunters. Also labeled as criminal tribes.
4. Gopal: They perform various physical exercises.

Age of group of students varies from 3 to 12 years. A school is conducted every day in a tent located near their residence, at a time convenient to the students. An instructor is selected from the same community, who stays with them. An instructor is given a formal training on how to co-ordinate, teach, communicate etc. The author and his team visit the camp regularly and give instructions using multimedia. Several available multimedia contents were collected and instructions are given to the students using multimedia. Regular meetings, demonstrations and training for instructors are organized by the author.

The following subjects are selected for instruction:

The following educational strategies are being tried out during the studies:
1. Instructor led
2. Using various educational games
3. Instruction using multimedia
4. Anchored instruction using video

**Instructor led:** The author with his team conducts training program for all the instructors. They were asked to conduct the classes in traditional way. Local government text books are used for training.

**Use of educational games:** Various educational games made from card board sheets and locally available materials such as sticks, seeds, empty match boxes were given to instructors.

**Instruction using multimedia:** Various educational CD ROMs, available in the open market and specially developed for this purpose are shown to students. Especially CDs on nursery rhymes, alphabets, numbers and stories were shown.

**Anchored instruction using video:** Video shoot of the surrounding areas of nomadic camp is carried out. The same is shown on the computer to students.
who are asked several questions about their surroundings: identifying colors and objects; counting things; camera focused on wrong practices in the camp like unclean pots, dogs drinking the same water as people, children relieving themselves near kitchens; etc. Children are asked to comment on the video and discussion is led to logical conclusion. Video from one camp was shown to other camps.

It was observed that response from children to all the methods is encouraging. It will be wrong to say, any one of the methods is effective. Games and instructor led instruction has its own place. For example for conducting daily exercises, games and prayer, presence of instructor is needed. Instructors also ensure the children took a bath, cut their nails etc. Educational games engage the children and give them satisfaction of “Learning while doing”. They can play with the educational games. As said earlier, most of the games were made from local available material hence they can break it and play with it.

The computer has its own glamour. Students are able to easily handle the computer and also lead the lesson themselves. Children on their own come to the class, once the multimedia lesson is started. For instructor led classes, we need to forcefully bring them to the class. Multimedia content is useful for giving them various experiences such as showing them an unseen thing. Children in Magarsangavi had never seen the “sea”.

TCS [9] found that Multimedia instruction can teach adult illiterates in 30hrs of computer instructions. Computers in nomadic camps can be used for adult education. Child marriages are common in these societies, mainly for security of the girl child. Cases of AIDs are on the rise. It is necessary to train people on avoiding early pregnancy. It is difficult for male instructors to give training to closed society like this. But using multimedia and video may send the proper message without hurting social norms.

Government boarding schools are unable to attract and retain nomadic children. A regular syllabus is given through these schools. Government and NGOs are starting a non-formal education center at various places. Wandering schools on the nomadic camp will help in enrolling all children’s in the school. The school employs one teacher, who is often educated up to Xth class. Instructors are provided with short term training. It is observed that very often he is unable to deal with multi-grade class and social problems.
A look at a following table may reveal certain facts.

**Comparison between different learning schools**

<table>
<thead>
<tr>
<th>Problem</th>
<th>Boarding School</th>
<th>Non-formal School</th>
<th>ICT Based Wandering school</th>
</tr>
</thead>
<tbody>
<tr>
<td>Wandering Life Style</td>
<td>Student stays away from home</td>
<td>School on nomadic camp</td>
<td>School on nomadic camp</td>
</tr>
<tr>
<td>Discrimination from teacher</td>
<td>Possible</td>
<td>Learning in their own environment</td>
<td>Learning in their own environment</td>
</tr>
<tr>
<td>Learner centered Education</td>
<td>Motivation of teacher</td>
<td>Multi-grade</td>
<td>Possible</td>
</tr>
<tr>
<td>Quality Education</td>
<td>Motivation of teacher</td>
<td>Motivation and quality of a teacher</td>
<td>Possible</td>
</tr>
<tr>
<td>Topics on Health, Superstition, Awareness of Rights</td>
<td>Motivation of teacher</td>
<td>Instructor may not be able to handle tricky topics</td>
<td>Possible with the help of ICT</td>
</tr>
</tbody>
</table>

4. The Model

We have given one laptop per nomadic camp. There are 20-30 children per camp. Since no electricity is available on the camp, we have provided power using a solar panel that charges the laptop battery and also serves as power storage. A 37 Watt solar panel fitted with 12V, 40 Amps battery gives 500W storage. We are thinking of adding additional batteries for additional backup. Laptops consume only 15-20 Watt power.

Educational contents for various educational levels are preloaded on the laptop. Additional content on life skills and on taking care of specific needs of the nomads is planned. 3 students are using the laptop at a time, 1.5 hrs a day. An instructor is a facilitator whose job is to ensure that students are using the right lesson and keep the system working. One laptop can take care of varied educational needs of the multigrade and varied age group of students.

5. Observations and Conclusions

To cater to educational problems of nomads and for other disadvantaged groups, ICT can provide the answer. A computer symbolizes the modern tool and being able to operate them gives a sense of empowerment. This is very important for group suppressed for a long time. It seems feasible to develop educational strategies for educating nomads by combining modern tools like ICTs.
ICT is effective in handling issues such as health and adult education. A para-teacher is not fully equipped to handle such issues in a society like nomads. With the help of media, instructions can be planned with the help of experts. The role of the instructor remains that of a facilitator and minimum quality of instruction can be ensured.

Some more time and work is needed to comment, describe the results and propose a model for future use.

Acknowledgement
The author wishes to thank Prof. Krithi Ramamritham, Head, KReSIT, IIT Bombay, Dr. M.V. Anathakrishnan of KReSIT. Team members Rohan Kulkarni, Rakesh (all of MLAsia), Jyoti Shinde (Vigyan Ashram), Mr. Narsing, Laxman, Datta and Chandrakant, Sambhaji and Umesh Jogi (BVVP) for their support. The author is thankful to YCMOU, Nashik for allowing this topic to be used for Ph. D. work.

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Information and Communication Technology and Distance Education in Brazil

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Abstract

The analysis of the different methodologies of education adopted by the leading universities in their distance education courses may instigate the interest of the professors involved with distance education, in the process of choosing the methodology that better assists the students who cannot or prefer not coming to campus.

For the universities that are introducing courses in the distance education one of the main challenges is to seek for the appropriate pedagogical language of learning carried on by multiple media available. The tutorship action is essential, being conclusive to the courses success. In this new model of education, the tutors act as a facilitator of the course rather than an specialized professor, because these courses are structurally less organized but focused on personalization, considering that the students are the responsible ones for taking care of its education.

The main goal of this paper is to create a conceptual model of analysis to identify how the information technologies and communication is being used in the distance education courses offered by high education institutions in Brazil. With the data gotten through research the objective is to present a comparative analysis capable to identify the interaction ways and support given to alike students among the universities, in other words, groups that have similar characteristics with respect to the pedagogical projects of its courses, its materials, courses structure, ways of interaction between professor and student, students attendance, public, adopted technologies and valuation systems as well.

Key words: distance education; information and communication technology; methodologies of education
1. Introduction

According to Drucker (1999) and Toffler (1990), in the knowledge society capital will no longer be represented by raw materials or goods produced and accumulated, but rather by knowledge. Thus, in the same way today we demand additional material assets, in this new society we will demand more knowledge. Information society synthesizes the emergence of a technical and economic paradigm in which information is the main raw material.

Lately, the expansion of the knowledge accumulated by society has been substantial. Thanks to the internet, people today have much greater and much faster access to information than they had in the past. Yet, as pointed out by Valente (2002), the fact of having abundant information does not mean people have more knowledge. Knowledge is the product of processing information. How can we encourage this processing and how does it take place?

For our nation to reach better levels of education, we have to establish the means to give people the chance to build knowledge. Consequently, we must increase the supply of education.

By applying technology to education, we can change this perspective, because the development of new technologies – which has triggered a silent revolution in society – has also changed the way in which people carry out their business and work with other people, and has enabled new possibilities of teaching and learning. New technologies brought about new forms of Distance Education, which combine well-known educational resources with tools provided by modern information and communication technologies (ICT).

In the past few years, the internet has caused many changes in education, whether by the technology applied or the manner in which the course content is presented. The changes can be perceived in the scope, the content and the provision of Distance Education. It is within this context that Distance Education has been rising as one of the most important tools to disseminate education and knowledge.

In Brazil, we see a growing demand for distance education. At the macroeconomic level, the interest of raising the population's educational level in the short term is associated to factors such as an increasingly globalized economy, in which a country has to be on equal footing with the international and global markets.

One of the main challenges faced by higher-learning institutions (UNIVERSITY) arriving in the Distance Education field is to seek a teaching language suitable for learning through the various media available. Course coordinators must closely supervise and monitor teachers, tutors, interns and administrative staff, because students will interact with the course through different means, all of them essential to successful learning. A close-knit, well-structured team comprised of experts in education and technology can ensure the students’ successful learning experience.

2. Objectives

In spite of Distance Education existing for more than 150 years, it was only in the last two decades that academic studies and research systematically
analyzed this approach to disseminating knowledge, according to Maia and Abal (2001).

The main objective of this study is to create a conceptual analysis model to identify how information and communication technologies (ICT) are being used in Distance Education educational processes at universities in Brazil.

We will analyze the various characteristics and teaching methodologies applied by University Distance Education courses. This study will also present a comparative analysis to identify similar student interaction and support approaches among the different universities, i.e., groups that have similar characteristics regarding their courses’ educational projects, the materials used, the structuring of the courses, the ways in which students and instructors interact, the support provided to students, the technologies used and the evaluation systems adopted.

3. Summary of theoretical references

The various models of Distance Education are built around the core components of the education process: presentation of content; interaction and ways of accessing the university, the other students and the resources; practical application; and evaluation. Each Distance Education model uses and combines technologies in various ways to address some or all of the above components. The various Distance Education models differ not only in regard to the type of technology used, but also how learning is controlled and where teaching takes place. In some models, the instructors and the institution have primary control, which is the case of the traditional classroom. In other models, this control is handed over to the students.

The Institute for Distance Education, at the University of Maryland University College (2005), provides three specific models or groups of Distance Education activity, when we analyze the general characteristics of Universities, considering all aspects, from learning environment to evaluation systems. The main characteristics analyzed in this model are the following: course design, regarding availability of material and the computer technology used; the learning environment, which covers the ways students interact with instructors and tutors; teaching, regarding the course structure; and the technology used, which includes the information and communication technologies used in each group. The groups are described as follows:

*Group 1 – Distance Classroom*

This model is structured on technologies capable of taking knowledge to different points of the country. The University in charge of the course controls progress and the location where it will be held. Classes involve synchronous communication: instructors and students agree on the time and place to meet. The Universities manage to handle a small number of students at each location. In this study, the institutions included in this group have 30 students at various “distributed classrooms”.

*Group 2 – Independent Learning*

In this model, students can take the course regardless of where they are and they must not follow set class schedules. Students receive study material, which includes a course program. The university provides the student with a monitor or tutor, who will advise this student, answering questions and
correcting exercises. The monitor and the student interact using the following technologies: telephone, fax, chats, e-mail and traditional mail. There are no classes per se. Students conduct their studies independently, duly following the course program. Students can interact with the tutor and, in some cases, with other students. The course content is presented in printed form, CD-ROM or video.

Group 3 – Independent Learning + Classes

This model involves the use of printed material and other media, such as VCR tapes or computer disks, which enable participants to study wherever they wish. Other technologies involving students can also be used. Participants meet periodically in groups, at specific locations, to receive teaching support. In the classes, students discuss the course content, clarify concepts, carry out group work, conduct laboratory experiments, make simulations and perform other exercises associated to learning.

4. Investigation methodology and sources

When adopting a methodology, one must always consider the instruments currently accepted in the course’s field of study. Mumford (1985) says that for research in information systems, best results are often achieved by a combination of methods. Thus, since this topic still has little accumulated and systematized knowledge, this study will adopt a combination of methods, to identify concepts and systematize Distance Education methodologies, to present the strategies of Universities that already offer Distance Education courses. The research strategy utilized in this study is that of case studies, consisting of multiple case analyses, of which each course, of each of the Universities analyzed, will be considered one unit of analysis.

The specific component of this study is: “How to create a conceptual analysis model to identify how information and communication technologies (ICT) are being used in Distance Education educational processes at higher-learning institutions (universities) in Brazil?”

Considering that this study intends to help formulate an analysis model of the methods used in Distance Education in higher learning courses in Brazil, the focus of study will be Brazilian Universities that apply Distance Education methodologies in their courses.

The Universities invited to take part in this research were selected by crossing information from the Brazilian Education Ministry (MEC), more specifically the Brazilian Distance Education Secretariat (SEED), which has a database of courses certified and authorized to offer Distance Education in Brazil; information was also provided by the Brazilian Association of Distance Education (ABED), which has a list of Universities that provide Distance Education courses. Thus, we identified the Universities that offer Distance Education courses.

Conceptual analysis model

Considering the theoretical review prepared for this study in the systemic models suggested by literature on Distance Education, we proposed an analysis model (Figure 1) to base data gathering and the analysis of the courses investigated. The model consists of the main characteristics of a Distance Education center and of its main factors.
5. Research results

The data collected at the 50 Universities studied were analyzed individually and later aggregated by similarity. This analysis of similarities took into consideration the basic questions proposed in the analysis model and in the case study protocol. By analyzing the data collected, we can draw a profile of the teaching methodologies adopted by Distance Education courses offered by Brazilian Universities.

Sample composition

The sample is composed as follows: 30% private Universities and 70% federal public Universities, as shown in Chart 1.

Chart 1: Sample characteristics – type of UNIVERSITY and sample by region
a) Courses offered
Regarding the area of knowledge of the courses analyzed, the sample is distributed as follows: Teacher training courses: 22; Business courses: 13; Technology courses: 7 and Other courses: 5.
The sample in question consisted of the following courses:

<table>
<thead>
<tr>
<th>Courses</th>
<th>No.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improvement (non credit course)</td>
<td>4</td>
</tr>
<tr>
<td>Specialization</td>
<td>12</td>
</tr>
<tr>
<td>Extension</td>
<td>12</td>
</tr>
<tr>
<td>Undergraduate</td>
<td>18</td>
</tr>
<tr>
<td>Graduate</td>
<td>1</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>47</strong></td>
</tr>
</tbody>
</table>

Table 1 shows that undergraduate courses are the most frequent in this sample, representing 39%. Undergraduate courses are the most common.
The great number of distance undergraduate courses offered throughout Brazil can be explained by the demand brought by Law no. 9394/96, to train teachers for the initial grades (first to fourth) of the primary education level. This law provides that "by the end of the Education Decade (2006) only teachers with college certificates or graduated through training in service will be admitted".

Students – number of students enrolled and graduated
The Universities analyzed have 80,929 students enrolled in Distance Education courses; most of these individuals attend distance undergraduate courses, a total of 68,640 students (about 85%). The undergraduate and specialization courses together account for close to 92% of all students enrolled. We see that among the courses analyzed, the most demanded distance courses in Brazil are extended courses, with more than 360 class-hours. This challenges the notion that Distance Education is mostly associated to fast training and short courses, in which students do not take part in any activities such as personal meetings with tutors or instructors, evaluations and such.

b) Teaching methodology and course design
Availability of material
We see that courses whose material is paper or CD-ROM-based are semi-classroom courses (Table 2), in which the material is distributed by the course tutor or instructor. We see that Universities prefer to distribute course content in printed form (53% of the sample). Some Universities provide material over the internet, in the form of virtual textbooks (24%) and the students decide whether to print the material or not.
We see that the internet is already being used as a tool to convey information between the students and the Universities. In the last few years, we have seen that Distance Education has inexorably been drifting to web-based teaching. Yet what we see is that most of the courses still offer their students printed course material (about 68%), even though 97% of the courses use the internet to distribute their material and to have students interact with instructors.

c) Learning environment

Forms of interaction between students and teachers

When one considers that the best technology is that which reaches the students wherever they are, it is easy to understand why, at the participating Universities, the interaction between instructors/tutors and students is almost always (98% of the Universities) by internet, telephone or fax. What changes from one course to another is the possibility of having classroom interactions.

The means used for communication between instructor and student are many. Depending on the type of communication adopted, or the combination thereof, we have greater or lesser interaction between agents. Many articles state that the best strategy for a distance course is that which combines classroom learning with Distance Education. This is because people first establish personal relationships in the physical world and only then transfer this relation to the distance world, in a more efficient manner.

Student support

In all, 98% of the courses analyzed use internet for student / instructor / tutor interaction, regardless of this being a distance course or not.

Table 3: Computer resources and form of interaction between students and instructors

<table>
<thead>
<tr>
<th>Computer resource</th>
<th>Internet, telephone and fax</th>
<th>Classroom, internet, telephone and fax</th>
</tr>
</thead>
<tbody>
<tr>
<td>CD-ROM</td>
<td>12.8%</td>
<td>17.0%</td>
</tr>
<tr>
<td>Internet</td>
<td>17.0%</td>
<td>25.5%</td>
</tr>
<tr>
<td>Teleconference</td>
<td>2.1%</td>
<td>14.9%</td>
</tr>
<tr>
<td>Video</td>
<td>4.3%</td>
<td>10.6%</td>
</tr>
<tr>
<td>Videocast</td>
<td></td>
<td>2.1%</td>
</tr>
<tr>
<td>Videoconference</td>
<td>4.3%</td>
<td>21.3%</td>
</tr>
<tr>
<td>Video on demand</td>
<td></td>
<td>2.1%</td>
</tr>
<tr>
<td>Web-radio</td>
<td>2.1%</td>
<td></td>
</tr>
</tbody>
</table>
In courses that are entirely distance, this interaction can take place in various ways (table 3), such as through videoconferences (4% of the sample) or web radio (2% of the sample).

Other than internet, the most common computer resources used are the following: CD-ROM, which is commonly used to distribute the course content; videoconference, in which an instructor is at a given location and the student at another remote site, but which enables synchronous communication between them; and teleconference, which works as a videoconference without synchronous interaction between participants.

The Universities that use teleconferences associate the use of this tool with the availability of a toll-free telephone line, through which students at far-away classrooms call the instructor and pose their questions. These questions are "filtered" and submitted to an instructor, who answers them. In the sample analyzed, nine Universities use this resource in this manner, or with some variations.

It is important to point out that hybrid classroom/distance courses are those that most extensively use the available computer tools.

d) Technologies use – platform and environment

Most of the universities (55%) use platforms they have developed internally, instead of purchasing off-the-shelf platforms.

In all types of courses studied, we find Universities that use their own internally developed platforms. Some of the projects for platforms to manage distance courses have been developed in Brazil.

WebCT is used by universities that charge the highest prices for their courses, an average of R$9,400. On the other extreme, students of Universities using AulaNet pay the lowest prices, an average of R$200. Free courses use their own platforms in about 60% of the courses. In this segment, in addition to the Universities’ own platforms, only AulaNet and LearningSpace are used in free courses.

e) Evaluation criteria adopted

In all, 77% of the courses analyzed have classroom final examinations. This is an Education Ministry requirement for certification, but also shows concern with the possibility of the person taking the course using a false identity. About 57% of the courses analyzed that have classroom final examinations also evaluate their students through their participation during the course, in chats, forums and other activities.

All courses that have classroom final examinations also compute the students’ final grade through a set of evaluations, which includes tests, chat and forum participation, exercises, classroom attendance and, finally, a final examination. This is true for all but one of the courses studied. In specialization courses, this final paper corresponds to a monograph.

Only 13% of the courses analyzed in this sample have a distance final examination. Short courses, such as extension courses, have at least one distance evaluation in 50% of the cases.

f) Cost to the student

The average cost of graduate courses is the highest of all, about R$6,000. The specialization and undergraduate courses are also quite
expensive, if compared to the rest of the sample. The higher price of these courses is explained by the fact that they are longer, with more than 360 hours of class, which demands many hours for developing content and tutoring.

In our sample, about 40% of the courses are free.

If we analyze the distance courses offered and which comprise the sample, that with the highest cost for the student is the Bachelor’s Degree in Business with major in General Business Administration, offered by Faculdade de Administração de Brasília – AIEC/FAAB. The overall cost for this course was R$22,640 at the end of 2002. A total of 600 students are currently enrolled in this course. Extension courses are the shortest and the cheapest for the students. Free courses are found only among undergraduate and improvement courses.

6. Concluding remarks

The study’s results show that the substantial rise in demand for distance courses in Brazil is attributable to factors such as the need for permanent adult learning, knowledge refreshment, greater specialization of expertise and better access thanks to lack of physical barriers between students and the Universities.

In the sample analyzed, we have 80,929 students enrolled in Distance Education courses in Brazil; most of these individuals attend distance undergraduate courses, about 85% of the total. The large number of distance undergraduate courses in all regions of Brazil can be explained by the demand brought by Law no. 9394/96, which required training for teachers of the primary level, from the first to the fourth grades.

The teaching methods adopted by some Universities are quite flexible: the students can take the course at home or any other place they choose; the course materials are developed by different teachers (tutors), not necessarily the instructor in charge of the course; the teacher (tutors) in charge of a particular group of students did not necessarily take part in the team developing course content; the courses are offered in different cities.

All Universities analyzed use teaching platforms or Learning Management Systems (LMS), which are designed to simplify course management. These tools help students in their individual planning of the learning processes, and allow them to collaborate with each other by exchanging information and knowledge. Most of the Universities (55%) use platforms they have developed internally, instead of purchasing off-the-shelf platforms. All tools are used in both hybrid classroom/distance courses as well as those entirely distance-based.

We clearly see that Universities prefer to distribute course content in printed form. Some Universities provide material over the internet, in the form of virtual textbooks and the students decide whether to print the course content or not.

Another important matter regarding the material and course content we should point out is the matter of copyrights. This is still an open issue between Universities and teachers who write course content, and it should be cleared up to avoid future claims.

Considering the current situation of higher education in Brazil, which demands more openings in the coming years, Distance Education could be
used as a tool to expand the reach of courses offered by Universities, providing chances of education to a greater number of applicants. Yet Distance Education should not be considered only a form of course delivery, which would not ensure quality education. It is necessary to seek an education language that is suitable to learning through the various media available. It should structure processes, define objectives and educational issues and should apply instructional design techniques. No technology can address all problems. Learning depends more on the way the technology is being used than on the type of technology itself. Thus, tutorship, interaction and student support are also essential and determining elements to ensure course success. A close-knit, well-structured team comprised of experts in education and technology can ensure the students’ successful learning experience.

Yet nowadays one has to not only learn, but also learn how to learn. To achieve this goal, the educational relationship must be prepared based on the education and planning objectives of each course. The instructor must play a key reconstructive role in this process, because it is necessary to combine modern learning theories to help achieve course objectives. Since learning will become a lifelong task, we must create an environment in which experiences can be shared by all parties in this process, to encourage the creation of learning communities. The commitment of instructors and students involved in this process will be decisive in this learning process. Yet in spite of all existing and available technologies, we must never forget that the cornerstone of the whole process is the human element.

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ICDE’s interview with Susan D’Antoni, IIEP:

Since 1995, Canadian Susan D’Antoni has been working at the UNESCO International Institute for Educational Planning (IIEP) which is the UNESCO’s centre for training and research specialising in educational planning and management. Being one of the top experts in new technologies and education, Susan is currently head of the IIEP Virtual Institute.

Previously to moving to France, Susan D’Antoni led the Canadian government’s Correspondence Education Project, and she was Chief of Projections and Analysis in the Education, Culture and Tourism Division of Statistics Canada. Subsequently, she became Director of the Division of Research, Policy and Planning at the Association of Universities and Colleges of Canada.

Susan D’Antoni is currently working very actively in the field of Open Educational Resources. ICDE met Susan in Paris on November 12 and 13, in conjunction with the launching of the ICDE Global Task Force on Open Educational Resources. Here is a transcript of her opinions:

1. OER is an importance resource that has the potential to expand the offer of higher education, what are the main benefits OER offers to individual learners and to institutions?

In 2005, the UNESCO world report entitled, *Towards Knowledge Societies*¹, was released. This report puts forward several key ideas:

- Diminishing the digital divide is crucial, but not enough -- because it is most often coupled with a much older and deeper knowledge divide.
- Knowledge plays an increasingly important role in economic growth, in both North and South. It is also one of the keys to human and sustainable development.
- Knowledge societies will accomplish their mission only if they succeed in fostering an ethic of collaboration and become knowledge-sharing societies.

The report also has a message for the higher education sector:

“Institutions of higher education are designed to play a fundamental role in knowledge societies, based on radical changes in the traditional patterns of knowledge production, diffusion and application.”

Making educational resources openly available to individuals and institutions is expected to have a number of benefits. Individuals will gain greater access to information and knowledge from a range of sources. Prospective students will be able to assess the program of study at the university to choose both the program and the university that best suits their needs. OER can be used to supplement a course that a student may be taking in a face-to-face or distance learning mode. OER can also serve both as a framework for self-guided independent learning, and as actual learning resources.

OER allows universities to showcase their materials. Universities play a crucial role in society as transmitters of knowledge and creators of new knowledge, and making that knowledge available as OER is a means of contributing to the sum of knowledge that is freely and openly available to all.

2- Why do you think is it mostly private initiatives and originating in the USA (such as The William and Flora Hewlett Foundation) that support large OER projects?

Change can be promoted by many different factors. In the case of the Open Educational Resources movement, the William and Flora Hewlett Foundation has played a very important role. Because of its vision and program to support OER and the significant resources that it has allocated to a number of both large and small projects in the area, the Foundation could be seen as playing a role in steering development. However, I think it would be more appropriate to consider the fact that in financing a number of initial projects, it has stimulated the development of a movement which now has its own impetus. And although the initial projects were undertaken in the US, the foundation now supports a number of projects worldwide – such as, the African Virtual University, China Open Resources for Education, the Commonwealth of Learning, the Dutch Open University and the UK Open University.

There are already initiatives in many other countries, and as awareness of the OER movement spreads, there will be more initiatives worldwide.

2. It is often mentioned that OER has particular relevance for developing countries. However, there is little awareness of their availability and potential, so resources will be difficult to exploit. What kind of actions are UNESCO and IIEP developing to cope with this problem? Is there any “awareness campaign”?

The UNESCO International Institute for Educational Planning has indeed undertaken an awareness campaign. With support from the William and Flora Hewlett Foundation, IIEP has put in place a two-year strategy to raise awareness of OER at the international level and to create a Community of Interest on OER. It has three specific aims:

- To foster an international dialogue and exchange of information;
- To link people who might never have a chance to meet – either in person or virtually – to come together and participate in information sharing and debate on OER;
- To create an International Community of Practice on OER to support collaborative development and use.

Three specific activities were elaborated:

- A first awareness raising Internet forum;
- Ongoing informal discussion of key issues in a Community of Interest;
- A second forum on the results of an OECD study of OER.
As of November 2006, the Community of Interest includes more than 600 participants from more than 90 countries around the world, of which 60 are developing countries. And since the first forum in October 2005, the community has exchanged almost 2000 messages.

In addition to discussions in the two forums, the Community has addressed three topics identified by the members:

- The definition of a research agenda for OER;
- The exploration of what would be needed to create a Do It Yourself/Do It Together portal;
- Free and Open Source Software tools for OER, and lessons of the FOSS movement for the OER movement.

Each of the forums and the informal discussions in the Community of Interest has a background note and a summary report. These documents have been made widely available by means of the IIEP website and the IIEP OER wiki. In this way, the resources created for the discussions, along with the reports capturing the interaction of the Community can be accessed by anyone interested in the topic.

The address of the website is [http://www.unesco.org/iiep/virtualuniversity/forums.php](http://www.unesco.org/iiep/virtualuniversity/forums.php) and the wiki can be found at [http://oerwiki.iiep-unesco.org/index.php?title=Main_Page](http://oerwiki.iiep-unesco.org/index.php?title=Main_Page). And anyone who would like to join the OER community is invited to send a message to virtual.university@iiep.unesco.org.

3. What kind of institutional changes will imply the introduction of OER? What policies should be put in place?

The introduction of OER in an institution will imply change, which in turn will necessitate new or revised policy to support the creation and use of OER. Both questions will depend upon the institution – its context and its specific mission and the policies and procedures currently in place. In order to support reflection on this important question of policy development, IIEP has produced an initial draft of a policy framework as a starting point. If open educational resources are to reach their potential to share information and knowledge, and enabling policy environment needs to be put in place at a number of levels – institutional, local, provincial/state, national, and international.

The draft framework is currently under discussion in the IIEP Community of Interest on OER, and will no doubt be refined and elaborated through that process.

<table>
<thead>
<tr>
<th>Issues</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Institutional</td>
</tr>
<tr>
<td>Promotion/ Awareness</td>
<td></td>
</tr>
<tr>
<td>Motivation</td>
<td></td>
</tr>
<tr>
<td>Faculty support/ Recognition</td>
<td></td>
</tr>
<tr>
<td>Localization/ adaptation/ translation</td>
<td></td>
</tr>
<tr>
<td>Copyright/ Intellectual property</td>
<td></td>
</tr>
<tr>
<td>Quality assurance</td>
<td></td>
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</tbody>
</table>

“We are in the midst of a technological, economic, and organizational transformation that allows us to renegotiate the terms of freedom, justice, and productivity in the Information Society. How we shall live in this new environment will in some significant measure the end on policy choices that we make over the next decade or so. To be able to understand these choices, to be able to make them well, we must recognize that they are part of what is fundamentally a social and political choice – a choice about how to be free, equal, productive human beings under a new set of technological and economic conditions.”

His words underline the importance of the policy choices that face us in determining our future society and education and knowledge sharing are central.

4. Which role will faculty play as users and producers of OER?

Faculty members are central to the OER movement. It is their materials – those produced to support face to face or distance education in the institution – that can be made available as Open Educational Resources.

Faculty members are also central to the process of preparing those materials for release as OER by the institution. One important activity is the identification of third party copyright materials used in their own instructional materials, for these must either be cleared for use, or removed, or replaced. In addition, some faculty would use of the opportunity to revise material so they can better serve as Open Educational Resources. Released on the web for all to view, these materials have a high visibility and represent both the faculty member and the institution.

Open Educational Resources can be used by faculty members to supplement or enhance their own courses, or as a basis for reflection before preparing a new course, or used directly – perhaps with adaptation and translation to make them appropriate to the local environment.

5. There is an institutional reticence to openness in an increasingly commercial setting in Higher Education today. Are there any sustainable business models that will reward institutions for adopting the OER principles?

Sustainability is indeed one of the challenges of the OER movement. This is a topic treated in the current study of OER undertaken by the OECD Centre for Research and Innovation (CERI). Stephen Downes has prepared an analysis of potential models for sustainability. His paper can be found at [http://www.oecd.org/dataoecd/3/5/36781698.pdf](http://www.oecd.org/dataoecd/3/5/36781698.pdf).

6. There are a lot of educational materials published on the web, but it is rarely organised in a way to actually help increase the quality of instruction. Quality is a

central topic. How can users (independent learners) be sure about the quality of the materials available when they do not come from a renowned institution? Are there any quality assurance mechanisms?

Quality is an important issue for all OER initiatives, but it is true that it is of particular concern for users of ‘grassroots’ initiatives – open collections that anyone can contribute to. Many OER initiatives have some form of informal quality assessment, for example, through reputation management systems, which allow other users to comment on and rate materials, and can help to orient users towards materials that others have found useful. Peer review is another, more traditional academic method of assessing quality, which can be applied to OER.

It is important to remember, however, that ‘quality’ is subjective; ‘high quality’ materials in one context may not be considered equally ‘high quality’ the world over. In response to this, Rice University's Connexions initiative (http://cnx.org/), to which anyone, anywhere may contribute material, has developed a tool through which different users (individuals, institutions, professional societies, etc.) may set up their own review processes. Those users may then view Connexions through their own ‘lens’ (or portal) that selects and displays only the materials that meet their quality standards.

7. In your opinion, are there any lessons that the OER movement can learn from the Open Source Software?

Yes, there are many lessons! The IIEP Communities of Interest on FOSS and OER have recently come together to discuss this very question. In particular, the OER movement could learn from the FOSS development model, with its emphasis on open, collaborative communities, where the conditions for membership are enthusiasm and programming skill (rather than academic credentials and reputation), rigorous documentation and quality control through peer review and regular testing.

Another important lesson is that the most successful and innovative open source software often comes about as a result of a developer 'scratching an itch', in other words, creating software that they needed to make their own job or life easier. The lesson for OER development is that teachers and academics should recognise the importance of creating materials that fit their own teaching needs first and foremost. Materials that are proven to be useful in at least one learning context are more like to be of ultimate value and use in others.

Finally, OER creators can learn from the licensing choice of FOSS developers. The success of FOSS can, in part, be attributed to a strong commitment to open licenses that safeguard ongoing collaboration and sharing, and facilitate progressive development of software. FOSS advocates in our group discussion argued that the OER movement should have a similar commitment to open licensing to safeguard the shared principle of openness and freedom of knowledge and resources.
ICDE Task Force Open Educational Resources – Inquiry Results

ICDE announced the formation of an ICDE Global Task Force on Open Educational Resources during the recent 22nd ICDE World Conference in Rio de Janeiro last September.

The mandate of the Task Force is to develop a report on Open Educational Resources. This report is aiming at contributing to the global movement of OER, adding specific 'ICDE' flavour and value by adopting the self-and-distance-learning perspective rather than the current mainstream content-in-classroom perspective.

Results of the Inquiry:
In order to give the Task Force an efficient start ICDE sent its members an Inquiry on Open Educational Resources (OER) in the middle of October 2006. The purpose was to get an overview on the issue of Open Educational Resources and the level of involvement of the ICDE membership in this movement.

A good number of ICDE members representing different world regions responded to the inquiry. The results showed that Open Educational Resources is a very actual theme for many institutions around the world.

To the question about their knowledge on the OER movement, 68% was definitely acquainted with the movement, while 32% was not too familiar with it.
To the question on the institution’s involvement or planning to becoming involved in a project on OER, 60% was positive while 40% was negative. Those involved in projects have also described them, and provided links to the relevant websites.

Many of the respondents have already projects in place regarding OER. Below is a summary of the answers from the point of view of their impact:

Answers:


- UT is now involved in a project to develop a Learning Object Repository in collaboration with Sukhothai Thammatirat Open University of Thailand. The project is funded by the International Development and Research Centre (IDRC) of Canada. Once the Repository is completed, it will be dedicated as an open resource for other distance learning communities, especially those in Asia. www.pandora-asia.org.

- We are currently in the process of enabling our learning content materials to be shared by using various media such as broadcasting (TV and radio), printed
textbooks, and the Internet for their delivery, keeping in mind that an indexing system for content organization that is common to all Open Educational Resources would be necessary in order to facilitate the broader use of its contents.

- The goal of “Daneshestan” with the mission to develop OER is to provide On-Line resource for all courses. In Oct. 2006, two courses started for the first time via the Web. The students are chosen without entrance exams. All educational activities are defined On-Line, including resources. 15 students enrolled for a BSc (Computer Sci) and 430 for an MSc (Moral Sci). The budget comes mainly from the fees. 
  http://www.vuict.com

- Project Goals: Digitalise the SLM on Journalism and Mass Communication. Period: two years. Participants: All Open Universities and institute of distance education in India. Budget: To be prepared


- 1- Modern Distance Education Resources Website: 
  http://www.mder.com.cn/WebCenter/ 
  2-- Collaboration with MIT Open courses CORE: 
  http://www.mder.com.cn/WebCenter/item/part/outside/114_masheng.htm

- We are studying the possibility of our Association organizing the repositories of reusable learning objects and other OERs made by our member institutions on a national level within our country. Still too early to be able to furnish details on how we will do this.

- We are planning an open access university press that will publish monographs as well as journals. The first monographs will be out next year. The volumes and journal will appear on line no charge. We are also investigating the implications of making our online courses freely available. There some key issues that will need resolution. We have experimented with creative commons licensing.

- IOU is a network of affiliations, universities and institutions for higher education in Europe, Asia, North America, and Africa.

- As the main support provider in Scotland for teachers, schools and local authority and advice body on curriculum, learning and teaching and ICT we provide a very broad range of materials. We therefore strongly assist the continuing professional development (CPD) of teachers, managers and leaders. They can access practical support and advice to improve the quality of their work and help young people in Scotland achieve their full potential. Our online services provide comprehensive materials and are widely used. We are now leading in the management of a new schools intranet covering every school in Scotland (3000+) which will enable every teachers, local authority, parent in Scotland to access and share resources and ideas if they wish. Within this development (called GLOW) the CPD portal should be particularly beneficial. http://www.ltscotland.org.uk

- Between 1995 and 2001 we offered a course on Media and Communication in which the study material and the study guides were assessable for free on the web. A discussion forum and a series of seminars were only available for student that have signed up for the course and paid the registration fee. In 2001 we considered the course outdated and took it off the programme.

- In 2004, the Municipal Educational Commission of Shanghai decided to launch a project called Shanghai Education Resources Centre, which aims at speeding up the construction and application of ICT in the educational field in Shanghai. Shanghai TV University and Shanghai Audio-Visual Educational Studio which are under Shanghai
Distance Education Group was chosen to implement this project. It plans to take about three years from 2004 to 2006 with budget of 70,000,000RMB (equivalent to 8,900,000 USD) to complete this project, resulting in easy access for all education organizations and teachers in Shanghai, promoting educational resources of the centre rich and diverse. http://www.sherc.net/sherc/

- There is an initiative of leading Polish Universities (5) of delivering the content of some courses on the basis of Internet resources.

- Open Educational Resources has always been part of the general policy of NETTUNO before and now of the new International Telematic University UNINETTUNO. Video-lessons have been broadcasted in two non-encrypted satellite channels since 1996. The didactic website has always been open and the didactic materials available to anyone. In addition, the International Telematic University UNINETUNO is participating at the “MORIL” project (Multilingual Open Resources for Independent Learning), preparing from the EADTU, funded by the William and Flora Hewlett Foundation, preparing for the launch of a first wave of Open Educational Resources (OER), to be disseminated freely and online, throughout Europe in a multilingual format. (Project information: http://www.eadtu.nl)

**Opportunities of OER**

On the major opportunities that OER could bring to open, flexible and distance learning institutions, the main points are as follows:

- Make resources available to disadvantaged institutions

- Greater volume of good quality learning resources available to all

- Open educational resources can enrich the learning process. They are at the same time can help distance learning providers to be more cost effective in developing its learning materials and supports. The open educational resources can also become a benchmark for ODL providers so that eventually they will improve the total quality of open, flexible, and distance learning materials and processes.

- Providing additional services in the area of lifelong education to meet the various needs of various learners.

- The institutions can benefit from their present resources to enhance them for On-Line purposes. They can benefit from huge demand exist in for higher education, in particular in Developing countries.

- Greater variety and diversity of learning resources creating more flexible learning opportunities.

- Raised profile. Opportunities for partnerships through a “share-alike” protective clause in a Creative Commons license, which means that if the licensee modifies an institution's OER, the licensee must share that adaptation in a reciprocal manner.

- Underdeveloped nations and institutions with scarce resources can leap ahead in obtaining learning material to build programs that help solve capacity problems; knowledge will be advanced to a broader audience more rapidly; publishers may be bypassed and information obtained more cheaply.

- Sharing of open resources
• Group work; know new experiences and initiatives
• Save money by not “reinventing the wheel”, by using already-existing resources which meet the proper standards of quality, and by being able to do this on a global scale.

• The major opportunity is enriching the materials that are available globally for lifelong learning. It could well help make more educated students when they decide to more formally enrol. It could also ensure excellence through best practices.

• Learner centred education

• Ease of access: time, place, and format. Increased range of opportunities. Encouragement of lifelong learning. Overcoming barriers of distance learning centres, thereby open up opportunities.

• Enlarge interest in learning; increase opportunities for collaboration in learning resource and pedagogy; much more available resources available to learners; sharing of learning objects; increased visibility for participation institutions.

• Reaching a wider audience. Promoting collaboration among educational institutions. Supporting the exchange of ideas and academic discussion. Killing the 'not invented here syndrome'.

• Ability to differentiate in areas of value-add, such as students support, rather than have to reinvent or just re-package common content.

• It is a great opportunity to facilitate: · the common sharing of open education resources for all, · capacity building of all education institutions and organizations, professional development of teachers and staff in the DE field; system change of education administration in DE institutions and organisations.

• Voting definitely for it. It brings a fresh look at all we do.

• Opportunities: Increase Access to flexible learning opportunities, connected to appropriate networks like the NEPAD e-school initiative in Africa, could enhance access to textbooks and learning materials.

• Opportunities: All the people who could never attend the university, this way can finally receive the teaching by the best teachers without leaving their home. The value of the contents, in English, French, Arabic and Italian give our contents the highest price. The value of this model of distance education is in the fact that not only the university students can use the contents, but all normal citizen who can access through internet and connecting to the TV. Distributing knowledge for free to all citizens favours the progress of the society in its whole.

Threats:

On the major threats that OER could represent for open, flexible and distance learning institutions, the main points:

• Threats: I do not see negative effects in the distribution of knowledge. It is important that people providing the contents are really great experts in their field.
• Threats: Cost of the project; implementation in areas where there is low connectivity; IPR issues; convincing donors to support the project, resistance to its operations.

• Threat and also a new challenge to: the nowadays distribution system of educational resources, the current way to develop educational resources, the current teaching language and teaching method, the intelligence property right of educational resources.

• May not make much headway unless elite institutions are involved. Need to ensure content creators’ IP is properly valued, or OER could be stymied by legal wars.

• The lack of a viable business model. If students learn the art of self-study and have all the resources available as open resources, educational institutions have to rely on government support to produce the Open Learning Resources.

• Question about reliability of information to learner; confusion to learners or ‘shopping’ mentality developed in learners; loss of proprietary resources; copying by other providers; pressure on institutions to ‘outdo’ one another or to reduce fees.

• Potential increased in digital divide from people / areas with and without ease of access. Quality assurance materials. Person to person interface. Copyright infringement.

• Government control and bureaucracy.

• The key treats are: some universities will not invest the capital required to develop new courses. Private for profit universities will be able to further improve their competitive position and threaten the viability and funding for public or not for profit post secondary institutions. How can we ensure appropriate behaviours in a highly competitive environment? For example US legislation forbids US federal funds supporting US students taking distance education courses from foreign distance education institutions. What would stop a US for profit provider from harvesting on line resources and using these in a for profit context. The tendency might also be for a globalisation of curriculum when perhaps increasing diversity is needed. As the e environment demands greater sophistication and therefore greater capital investment in course development - are there going to be fewer and fewer institutions doing course development? Will global homogenisation be the order of the day as national government move through cycles of economy?

• Lack of initiatives.

• Threat to Copyrights.

• Threats: Someone pays, and the risk is that producers of knowledge may lose incentives to produce new knowledge; there are issues about quality—who screens new open access knowledge to assure it is legitimate; without skilled faculty and institutional experts to guide students with structured programs, students may get lost in the maze of information; chaos may result.

• Threats: A commercial entrepreneur might adapt and package your product then sell it for profit, (unless you imposed a non-commercial clause but this would restrict incorporating your resource with other free content).

• Opportunities are numerous, but the major threat is that the making resources available should be mistaken for teaching or learning. Resources in themselves are important but must not hide the learning and teaching activities themselves.
• The ‘not invented here’ syndrome, the complexity of copyright and intellectual property issues and the academic preference to constantly modify learning materials to tailor to specific learning objectives unique to a course, institution or country.

• No scope for research and innovations, uniform prescription of textual material, brand institutions may attract more and more students.

• The interaction between Private Sector and virtual Univ. and the virtual Univ. and traditional Univ. is a threat, if this movement considered locally only.

• More demands resulting from the increase in the variety of needs, the increase in disparity between the learners’ needs and the services that our institution can offer, the inconsistency between the needs of our institution’s learners and the conditions/requirements for creating the contents which can be used in the Open Educational Resources, intellectual property rights violation, our academic contents being used by for-profit organizations.

• Open educational resources without appropriate review processes can lead to low quality materials and thus low ODL provision and supports. There is also a danger of domination from more developed and resourceful institutions over the less advanced ones. In addition, for some distance learning providers, learning materials sales are parts of the income generation strategies to subsidy the low tuition fees. Therefore, publishing resources publicly and freely may jeopardize the sustainability of such institutions.

• The potential for copyright infringements of restricted works by authors of OER.

• Language barriers and cultural barriers

At last, 92% of those that answered the inquiry responded positive to the question about their interest in participating in ICDE activities in this topic.

The ICDE OER Task Force will produce a report available to our members that will be presented at the SCOP meeting to be held in Heerlen (The Netherlands) on 3-5 June 2007. We invite our member institutions and associations to participate in the work on OER and
follow the activities that ICDE is undertaking in this area, which will be closely connected to UNESCO policies and actions.
22nd ICDE – World Conference on Distance Education: Facts and figures
The recent 22nd ICDE World Conference on Distance Education was held in Rio de Janeiro, Brazil, 3-6 September 2006. More than 1500 participants from 73 countries were present:

**AFRICA**
- Angola; Botswana; Ghana; Guinea Bissau; Mozambique; Niue; South Africa and Uganda

**ASIA**
- China; India; Indonesia; Japan, Saudi Arabia; Korea; Malaysia; Pakistan; and Singapore

**Europe**
- Austria; Belgium; Bulgaria, Czech Republic; Denmark; England; Estonia; Finland; France; Germany; Hungary; Ireland; Italy; Norway; Portugal; Romania, Russia; Scotland, Slovak Republic, Spain; Sweden; Switzerland and The Netherlands.

**Latin America**
- Argentina; Brazil; Costa Rica; Colombia, Ecuador; Mexico; Perú; Puerto Rico; Dominican Republic; and Venezuela

**North America**
- United States of America and Canada

**Oceania**
- Australia and New Zealand

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**Submission of Papers:**

The Program Committee received over 650 papers, and accepted for presentation at the conference 528 papers. Being Brazil one of the world largest countries with a population of over 160 million people, the host country had a massive presence: almost half of the papers presented at the ICDE conference came from Brazilian distance education professionals.

Within Brazil, the regions were represented in the following way:
The papers submitted from international authors came from the following regions:

1. 32% the Americas
2. 11% Africa
3. 25% Asia
4. 29% Europe
5. 3% Oceania

**Theme:**

The main theme of this conference was: “Quality in online, Flexible and Distance Education”.

This theme was addressed from different streams:
1. The Value of distance and ICT based education: with focus on the political and philosophical aspects, from a national or international perspective: why and where does it make sense to use distance education
2. Promoting Educational Quality: focus on pedagogical, technological and organizational aspects.
3. Institutional Quality Issues: from a management perspective, focusing on change management, project management and long term sustainability: what should be done and how.
4. Research and New Developments

There were 348 presentations in parallel sessions and around 190 posters.

Keynote speakers:
The following persons were the Keynote speakers:

- **Abdul Waheed Khan**
  UNESCO
  Paris
  France

- **Atwi Suparman** [abstract]
  The Open University of Indonesia
  Jakarta
  Indonesia

- **Carlos Eduardo Bielchowsky**
  Centro de Ensino Distância do Estado do Rio de Janeiro - CEDERJ
  Rio de Janeiro
  Brasil

- **Cláudio de Moura Castro**
  Fundação Pitágoras
  Belo Horizonte
  Brasil

- **Helen Lentell** [abstract]
  Commonwealth of Learning
  Vancouver
  Canada

- **Henrik Hansson** [abstract]
  University of Stockholm
  Stockholm
  Sweden

- **John Tiffin** [abstract]
  Victoria University
  Wellington
  New Zealand

- **Peter Knight** [abstract]
  Institute of Educational Technology - Open University
  Milton Keynes
  UK
Book Launching:

During the course of the 22nd ICDE Conference, on Tuesday 4 September there was a social session in the Marimbas Club, where 8 books on distance education were launched and the authors were present to autograph copies.

The books were:

- “A Universidade Virtual e Global”
- “Avaliação da aprendizagem em educação online”
- “Distance Learning in Brazil, Best Practices 2006”
- “Educação Corporativa”
- “Tecnologias da aprendizagem em rede e ensino de história”
- “Um magnetico professor virtual”
- “Perpectivas Internacionais em Ensino e aprendizagem online”

This event was also the launching of the Web Conferencing and Collaboration Software to Power Online Learning Initiative for Primary Schools Project.

Pre-Conference Seminars:

On September 3, the participants were offered the possibility of attending several workshops, held either in English or in Portuguese, free of charge. The following seminars were offered:
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<th>Morning</th>
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| **A Global Virtual University: Vision, Mission, Structure, Operation, Impact.**
  John Tiffin & Lalita Rajasingham.
  Victoria University, New Zealand.                                     | **Research, Evaluation and Publishing in Distance Education.**
  Som Naidu, Editor, Distance Education.
  University of Melbourne, Australia.                                    |
| **Outcomes-based Assessment in On-Line Education.**                    | **"Distance Education in Brazil – 101“ An Informal Intro to the DL scene in Brazil for “freshman” visitors.**
  Peter Knight, Director, Institute of Educational Technology, OU-UK.    |
| **O Exercício de Operações de Pensamento no Desenvolvimento de Aprendizagem Independente.**
  Cristina Haguenauer & Nelly Moulin
  LATEC-UFRJ, Rio.                                                        | **Planejamento Estratégico, Tático e Operacional para a Sustentabilidade de Comunidades de Aprendizagem.**
  Silvia Fichman, Coordenadora, LINCA.
  Escola do Futuro, USP, São Paulo.                                       |
| **Possibilidades didático-pedagógicas na utilização de Ambientes Virtuais de Aprendizagem.**
  Jucimara Roesler, UNESC
  Elisa Zanette - UNESCO
  Suely Scherer - UNERJ                                                   | **Discutindo Perspectivas Internacionais em Open Learning no cenário Brasileiro: políticas educacionais e princípios pedagógicos.**
  Andréia Inamorato dos Santos, Institute of Educational Technology, OU-UK.
  Alexandra Okada, Knowledge Media Institute, OU-UK.                     |