

Commonwealth of Learning TVSD INVEST Africa

Baseline Study for Distance Technical and Professional Education

in Mozambique



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Executive Summary

Recent Government policy on TVET is committed to transform Mozambique's supply-driven system into a modern demand-driven TVET system, better able to respond to the needs of the labour market and with the involvement of industry and other key stakeholders. This reform process has largely been planned and implemented by the Ministry of Education through a World Bank funded Reform Programme – PIREP.

This project is now to be replaced by a permanent National Authority for TVET – ANEP. Also, the prime responsibility for TVET has recently been transferred from the Ministry of Education to a new Ministry of Science and Technology, Higher Education and Technical and Professional Education.

This baseline study has been undertaken to describe and analyse the current situation with respect to TVET, in order to evaluate the needs and the viability of employing open and distance Learning (ODL), and in particular eLearning in a flexible and blended approach. The main focus of the study is directed to that part of the system that is under the responsibility of the National Directorate for Technical and Professional Education (DINET) – namely the pre-tertiary level public-sector TVET institutions. These institutions are classified into three levels, equivalent to the subdivisions of the general education system: elementary, basic and medium, the last being equivalent to high school – the 11th and 12th grades. Elementary level courses are offered in 36 technical schools, 28 offer basic level courses and 19 offer courses at the medium level, a total of 85.

DINET has presented a project proposal to COL. Five TVET institutions have been selected by DINET to participate in the pilot project to test the flexible and blended model. They are: The Industrial Institute of Maputo; The Commercial Institute of Maputo; The Industrial and Commercial Institute of Beira; The Industrial and Commercial Institute of Nampula; The Professional School of Massinga. It is intended that the Industrial Institutes will develop and implement some courses in electricity, and the Commercial Schools will do the same in the competency area of restaurant and bar management and operation.

Data and information for this baseline study was collected by a desk study of available documents, by interviews of the five directors during a national TVET institution directors' conference and by visits made to each of the institutions. At each institution, the following activities were carried out: visits to the existing computer laboratories and other ICT infrastructure; interviews with technical staff responsible for maintenance of ICT equipment; visits to relevant workshops and laboratories; interviews with relevant department heads and meetings with a sample of relevant teachers.

All the institutions have at least one computer laboratory, with computers linked as a network and connected to the Internet, but the speed and reliability of the service varies according to the locality. Three of the institutions also have "distance education laboratories" which are essentially well-resourced videoconference rooms. The intention of the designers of these rooms was to make them serve multiple purposes. However, to date, these state-of-the-art laboratories have been little used.

The workshops and laboratories relevant to the occupational areas of each elearning course to be developed were inspected. The facilities seemed reasonably adequate, although some of the institutes, that have received support from German, Italian or other international cooperation agencies, are much better equipped than others, these are notably the Industrial and Commercial Institutes based in the capital, Maputo.

The group meetings with relevant teaching staff revealed that although most of the participants were well informed on distance learning conceptually, they lacked relevant practical experience. For example, only one participant had ever developed an online course module.

On the basis of the information collected, it follows that several categories of capacity building needs should be addressed to ensure the proposed project's success and sustainability. These are:

- Systemic sustainable project design competencies that consider and integrate the human, natural, physical, financial and social factors that may impact the project's effectiveness, efficiency, viability, alignment to national and international norms and standards;
- Curriculum and course design competencies that consider the existing realities of access, practice opportunities, existing infrastructure and the skills of available teachers, in addition to the course content;
- Instructional design competencies that may ensure that learning objectives are relevant to tasks actually performed in real-life job situations, that the learning activities, exercises and evaluation methods are in alignment with the objectives, that appropriate learning and teaching methods are employed and optimal presentation and delivery media are selected;
- Technical competencies in the use of the techniques and technologies, both hardware and software, that are to be employed for the design, development, implementation, delivery, management and evaluation of the proposed new courses;
- Monitoring and evaluation competencies, systems and protocols need to be aligned to existing Ministry requirements. It is likely that training in tracer studies will be needed.
- Educational project management competencies required to ensure that all the planning decisions are correctly and completely implemented to appropriate standards of quality, quantity and time, that course delivery and student support activities occur as per plan, that appropriate monitoring and evaluation procedures are followed, and that the results are used for formative improvements during the project as well as summative reporting.

COL is well able to contribute to addressing all six of these identified capacity building needs.

The report presents a schedule for the workshops, online study and other activities recommended as a project launch procedure. This schedule starts with planning meetings and basic workshops for course design and development teams from each of the five institutions. These are to be held during late August and/or early September of 2015. These are to be followed during October and November 2015 by online study of more advanced techniques via existing Moodle-based courses and, in parallel, the design, development and installation of the proposed courses in the areas of electricity and restaurant skills. Formative evaluation of the new courses is to take place during December 2015, leading to revision and finalization of all course components in time for full scale use of the courses during the first semester of 2016.

In assisting the Mozambique government to implement this pilot project, COL will help the country to contribute to the TVSD outcomes by becoming one of the 12 new nations to formulate sound ODFL policies and strategies for TVET. The pilot project will contribute to the other TVSD outcomes, both in terms of 5institutions starting to integrate the flexible and blended model, with approximately 25 teachers integrating technology into their courses and students studying flexible skill building programmes via ODFL. If the pilot is successful and then goes to scale, involving up to 100 TVET institutions, the impact could be significant.

Abbreviations

ANEP:	National Authority for Professional Education
CBT:	Competency-based training
CIREP:	Inter-Ministerial Commission for TVET Reform
COREP:	Commission for Professional Education and Training Reform
DINET:	National Directorate of Technical & Professional Education
DTIC:	Department for Information Technologies and Communication
ESSP:	Education Sector Strategic Plan
FIPAG:	National Urban Water Asset Holding and Investment Fund
FUNDEC:	Fund for the Development of Professional Skills
IEDA:	Institute for Distance and Open Education
INED:	National Institute for Distance Education
INEFP:	National Institute for Employment and Vocational Training
IFAPA:	Training Institute for Public Administration
ISAP:	Higher Institute for Public Administration
ISCED:	Higher Institute of Science Distance Education
ISDB:	Dom Bosco Higher Institute
MCTESETP:	Ministry of Science, Technology, Higher Ed. & Technical & Professional Education
MEDH:	Ministry of Education & Human Development
MINTRAB:	Ministry of Labour
ODL:	Open and Distance Learning
PIREP:	Integrated Reform Program of Professional Education
PRETEP:	Programme in support of TVET in Mozambique (Italian Cooperation)
QNQP:	National Vocational Qualifications Framework (see also NVQ)
SE-COREP:	Executive Secretariat - Commission for Professional Education and Training Reform
STAC:	Sector Training Advisory Committees
TVET:	Technical and Vocational Education and Training
UP:	Pedagogic University
VET:	Vocational Education and Training

1. Situational analysis of technical and professional education in Mozambique

1.1 Introduction: increased need for TVET

Mozambique has enjoyed steady economic growth over the last two decades. Between 1995 and 2004, GDP growth averaged 7.5%. In the last decade there has been continuing growth in most sectors, but particularly in mining, natural gas, transport, tourism, construction and services. The economy has been boosted by the discovery of high quality coal deposits in Tete Province (Central Region), natural gas deposits off shore in Cabo Delgado Province (north of Mozambique), and the exploitation of an increased land area for agriculture. This has posed new challenges for training the needed human resources for economic development. The TVET system, which is responsible for provision of skills demanded by the expanding labour market, was initially slow in responding to changing labour market demands. However, during these two decades, the government has taken steps to expand and improve the system. Efforts have been made by government, together with its development partners and the some private-sector organizations, to:

- develop TVET in Mozambique;
- strengthen its relevance to and alignment with the needs of the local labour market;
- link it to national economic development;
- enhance the socio-professional integration of graduates into the local labour market.

This baseline study has been undertaken to describe and analyse the current situation with respect to Professional and Vocational Education and Training (VET) in Mozambique, with particular emphasis on Technical and Vocational Education and Training (TVET), in order to evaluate the needs and the viability of employing Open and Distance Learning (ODL), and in particular **eLearning**, as a one means of achieving some of the above mentioned development goals. Further details may be found in **Appendix 1**, which presents the Terms of Reference (TOR) for this mission.

1.2 The existing TVET system

As in most countries, Technical and/or Vocational Education and training occurs at several levels of the educational system and is provided by both public and private educational / training institutions. Table 1 presents data on the public-sector institutions operating in 2009-10.

Number of pre-tertiary education institutions		
Primary schools 1st cycle	10,027	
Primary schools 2nd cycle	2,577	
General secondary schools 1st cycle	312	
General secondary schools 2nd cycle	90	
Technical secondary schools, elementary level (ET)		
Technical secondary schools, basic level (ETB)		
Technical secondary schools, medium level (ETM)		
Primary school teacher training institutions	24	
Number of tertiary education institutions		
Universities		
Polytechnics & specialised higher education institutions		

Table 1. Public sector educational institutions operating in 2009-2010

The numbers of institutions have increased since 2010, but the exact 2015 figures are not yet officially available, for reasons explained later in this report. However, the overall structure and

relative size of the different sectors are reasonably well illustrated by this table – although some care is needed to interpret them fully. The VET or TVET institutions have been highlighted to show more clearly the proportion of the public education system that they represent. However, the list of 19 specialized higher education institutions includes, for example, the tertiary level Institute for training in Public Administration: "Instituto Superior de Administração Pública" (ISAP). But the table does not include the three pre-tertiary level institutes for training in Public Administration – "Instituto de Formação em Administração Pública e Autárctica" (IFAPA). The reason for this is that the figures presented in Table 1 were prepared by the Ministry of Education and listed those institutions for which that Ministry held some responsibility. Administratively, ISAP and the three IFAPAs are under the direct supervision of the Ministry of Public Function – however, as a degree-awarding institution, ISAP also in part responds to the Ministry of Education and so is included in that Ministry's data.

There are other such "special cases" in the VET and TVET sector, due to there being so many ministries and other government and NGO players involved. In addition to the pre-tertiary technical schools included in Table 1, there are, for example, 12 training institutes that respond to the Ministry of Labour, and so on. Another potential complication is that "professional education" may be understood in different ways. If public servant training is included in this concept, then why not teacher training? In that case, the 24 primary school teacher training institutions could also be counted as members of the VET community, and also the largest of the 8 public-sector universities (in terms of student numbers) included in Table 1, the Pedagogic University (Universidade Pedagógica – UP), which trains most of Mozambique's secondary school teachers, may also claim to be part of the VET system.

An ongoing inter-ministerial project has recently developed an electronic database for the whole of Mozambique's "Professional Education" sector (that is, VET and TVET). This project was described in one of the presentations at the annual conference of Directors of Professional Education Institutions in Chimoio, in June 2015 (see **Appendix 5**). The presentation demonstrated how this database will be able to integrate data from all sectors of government and society in order to present a clear and complete picture of VET / TVET in Mozambique. At this point in time, however, this database and the data it will contain have not yet been released for public access. It is also interesting to note that the participants in this 250-delegate conference included the directors of the three IFAPAs, ISPU, UP, other teacher training institutions and so on. It seems that the concept of professional education is interpreted quite broadly by the Mozambique Government and by Civil Society.

However, the main focus of this study is directed to that part of the system that is under the direct responsibility of the National Directorate for Technical and Professional Education (DINET) – namely the pre-tertiary level public-sector TVET institutions. It is DINET that is proposing to launch a project of eLearning in this specific sub-sector and this baseline study is part of a response to the request made by DINET to assist this project (see **Appendix 2** for further details). The data for this sub-sector is as shown in the pre-tertiary section of Table 1 and is further described in more detail below.

The pre-tertiary level of the TVET sector in Mozambique is itself structured in three levels: Elementary, Basic and Medium. Indeed, since the introduction of the system of National Vocational Qualifications (NVQ), the Medium level is itself sub-divided into three sub-levels, to define a set of technical competencies as belonging to one of five levels: Level 1 - Elementary; Level 2 - Basic; Level 3 - Medium; Level 4 - Medium; Level 5 – Medium. However, this subdivision is only used for the classification of competencies and qualifications. The sub-classification of the schools or departments of pre-tertiary TVET institutions is in the three levels of Elementary, Basic and Medium - as shown in Table 1. Total enrolment in these schools runs at about 55,000 students, which amounts to about 9% of the total secondary level student population. Between 2005 and 2009, 171,288 people (30% female) were enrolled in various technical/professional training courses. By 2009 there were 83 public-sector technical secondary schools, 36 for elementary level (5,810 trainees), 28 for basic level (23,667 trainees) and 19 for medium level (7,848 trainees). Today, the number of public-sector TVET institutions has grown to over 100, with a proportional rise in attendance. Please note that the historical figures presented here are officially published and deemed accurate. However, the figures quoted for the current situation are based on provisional data presented for the first time during the annual meeting of Directors of TVET institutions held in Chimoio in June 2015 (see **Appendix 5**), as part of the presentation of the newly developed TVET database soon to be made publicly available online. At this meeting, it was stressed that the data presented was as yet subject to official review and verification. Therefore, all numbers here presented for the current TVET status-quo should be considered to be "informed estimates".

TVET schools and institutes are now available in all provincial centres. Most are operated by the National Directorate of Technical Education (DINET), which until a recent ministerial reorganization was part of the Ministry of Education but is now in process of transfer to the new *Ministry of Science and Technology, Higher Education and Technical and Professional Education* (MSTESETP). Vocational training is also offered by the Ministry of Labour (MINTRAB) through the National Institute for Employment and Vocational Training (INEFP), mainly catering for employed or unemployed individuals (including school leavers) who do not have alternative educational options or economic options in the labour market. The twelve INEFP vocational training centres are evenly distributed across the country and offer short courses ranging from one week to one year. There are also over 130 private training centres authorised by different Ministries to provide vocational education, some run by private-sector, for-profit, companies and others on a non-profit basis by NGO's and Religious Organizations. There is a need to draw together all these TVET providers under a single planning framework to give the system coherence and uniformity. This is one reason behind the recent Government moves to reform the TVET sector.

The length of the courses varies from three to four years according to the field of training and the level. The student who finishes the courses at a given level successfully is in principle ready to enter the labour market. However, the curriculum also aims to provide the necessary knowledge to carry on with studies in subsequent levels, so its curricular organization is comprised of both general education and skills training components. This, to some extent, reduces the possibilities (e.g. the available time to do practical work) for specialist skills development during the training period. The rapid growth in demand for technical and professional skills in the newly developing industrial and commercial sectors is now an economic, social and cultural challenge, particularly notable in recent years due to demand of qualifications and competencies in the newly developing industrial, agricultural and services sectors. This is another reason why the Government has perceived the need for reform of the TVET system.

1.3 Current reforms of the TVET system

Currently, Technical and Professional Education is in transition from a "classic" theory-based training curriculum to a more practical skills training model, based on Competency Standards, distinguished by putting more value on skills and competencies than on academic knowledge. Recent Government policy on TVET has been committed to transform the current supply-driven system into a modern demand-driven TVET system, better able to respond to the needs of the labour market and with the involvement of industry and other key stakeholders. The key steps are presented here:

- Establishment of an Inter-Ministerial Commission for TVET Reform (CIREP).
- Creation of a National Public-Private Board for TVET Reform (COREP), supported by a fulltime Executive Secretariat (SE-COREP).
- Development of an Integrated Programme for TVET Reform (PIREP) with financial support from the World Bank and several other international and bilateral Cooperating Partners.
- Establishing an Institutional Framework for Governance and Management of Technical and Vocational Education, with active involvement of social partners in the decision making.
- Development of an integrated Framework of Qualifications and Training, based on Competency Standards, with a curricular structure aligned with the needs of Industry.
- Increasing the capacity and improving the quality of Professional Training Institutions.
- Increasing access to TVET, mainly in rural areas and the informal sector (via FUNDEC).

In 2001, an Education Sector Strategic Plan (ESSP) was drawn up for the period 2001–2010. This was implemented as two consecutive five-year operational plans. TVET concerns within the first operational plan of the ESSP (2001–2005) were addressed in a Strategy for Technical and Vocational Education in Mozambique (Estratégia do Ensino Técnico Profissional em Moçambique 2002–2011) which was drawn up by the Ministry of Education (i.e. by DINET) and formally approved by the Council of Ministers in 2001. Following this, the Ministry of Labour also prepared an Employment and Vocational Training Strategy, (Estratégia de Emprego e Formação Profissional em Moçambique, 2006-2015) approved by the Council of Ministers in 2006. The current moves to reform the TVET sector are, among other things, attempting to integrate these diverse strategies into one.

The first operational plan was transformed into a major reform project financed by the World Bank. The TVET portion of this was named the Integrated Programme for Reform of Professional Education (Programa Integrado de Reforma da Educação Profissional - PIREP). The second operational plan of the ESSP (2006–2010) focused on primary education and teacher training, but also made funding available for the development of a strategy for operating the TVET system and for enhancing quality and efficiency in higher education. In comparison with the TVET strategy drawn up during the first operational phase of the ESSP, this later strategy emphasised the need for a demand-driven TVET system.

The PIREP reform programme has operated during both of the ESSP operational plans and is now due (overdue) for extinction. However, it is still active in implementing the programme of reforms, having been extended until the new permanent TVET management body (ANEP – see below) is established and fully functional. The PIREP reform programme is composed of four components, described in some detail in the following paragraphs.

A. Development of an Institutional Framework.

Component A has focused on reforming the governance structure of TVET and on developing options for future financing and management of the system. Unlike other education sub-sectors which are managed and supervised by a single ministry, TVET provision and management has been fragmented and involves a number of government ministries and private sector parties. These need to be drawn together under a single planning framework to give it coherence and uniformity. This component therefore had a dual function: (i) provide the institutional, funding and management framework for the reformed national TVET system; (ii) provide for the establishment of an Executing Secretariat (ES) of COREP whose main function is to coordinate the implementation of the reforms.

A proposal for the establishment of a National Authority for Professional Education (Autoridade Nacional da Educação Profissional - ANEP) and its relevant legislation was drawn up and approved in the recent Law that regulates TVET. ANEP will have a multi-sectoral constitution and will be responsible for planning, regulation, coordination, accreditation and supervision of the national

professional education and training system at both the secondary and tertiary levels. The intention is that ANEP will take over the duties of CIREP and COREP.

Regarding implementation of the reforms at the training institutions themselves, ES-COREP in close collaboration with the National Directorate for Technical Education (DINET) and the National Institute for Employment and Professional Training (INEFP) focused on the provision of refreshment training to teachers and instructors in the use of new equipment, the development of Standards-Based Qualifications and the design and development of competency-based training (CBT).

B. Development of Standards-Based Qualification and Training System.

Component B has focussed on the development and implementation of a qualifications system based on internationally accepted competency standards and levels. Examples of outcome-oriented modularised training programmes have been developed in the pilot phase of PIREP. Through the election of Sector Training Advisory Committees (STAC), employers and experts in the labour market have been actively involved in defining the competencies to be developed as well as the training content. Field reviews have been made and guidelines and manuals developed for student assessment, overall quality assurance and training and competence requirements for TVET teachers.

Component B has also led to the development and implementation of a National Vocational Qualifications Framework (QNQP - Quadro Nacional de Qualificações Profissionais) which provides an indication of the level of competency a student holds with a specific vocational qualification. The design of this framework was created in close collaboration with industry. The framework serves as a map for students, employers, organisations, training institutions and the general public wishing to interpret a given vocational qualification. It also demonstrates the equivalence between general and vocational qualifications and provides a basis for credit transfer between different streams of secondary education. Consolidation of the key elements and processes of the TVET system that has occurred under component B will ensure that graduates will receive recognition for their skills regardless of where their learning and skills acquisition took place.

The activities under this component have progressed to a satisfactory level. In addition to the many qualifications approved for the mainstream training programmes offered by public-sector TVET Institutes, ES-COREP has worked with private-sector technical committees for specific areas (e.g. mining and gas, computer industries) on the designing of new qualifications for the mining sector, on the development of curricula for short term training for the ICT sector and for qualifications in the areas of business administration and management. The design of occupational standards and review and validation of the approved qualifications continues to be performed with involvement of the relevant stakeholders, in particular the private sector.

To strengthen the quality of teaching, learning and the management of TVET institutions, training of teachers and managers in these professional areas is ongoing. In 2014, 384 teachers received short term technical training on areas of their specialization. Training of trainers in Competency Based Training (CBT) continued to take place - during 2014, 232 teachers were trained in the design and conduct of CBT and 187 people were trained in modern evaluation and verification techniques. Much of this work has been performed by DINET's partners in the private and non-profit sector, such as for example the Dom Bosco Higher Institute (Instituto Superior Dom Bosco – ISDB), who is also to be a partner in the execution of the eLearning project currently being planned by DINET.

C. Quality Improvement in Training Institutions

Component C focused on improving the overall quality of public and private pre-tertiary technical and vocational schools. Many of these schools had underqualified teachers and managers, a shortage of teaching aids, dilapidated workshops, outdated curricula and insufficient career

guidance and internship arrangements with industry. An overall Quality Assurance and Management System (QMS) for institutions was developed through a process of consultation with stakeholders and was approved by SE-COREP in 2011. The system is based on self-assessment by institutions and an external review by a team of experts.

Regarding the improvement on the use of new facilities and installed equipment, ES-COREP in close collaboration with the National Directorate for Technical Education (DINET) and the National Institute for Employment and Professional Training (INEFP) focused on the provision of refreshment training to teachers and instructors in the use of new equipment. This has ensured that teachers have the necessary knowledge and skills and that both school managers and teachers are informed on the safety measures to be taken in the use of specific equipment. School managers have been required to implement preventive maintenance procedures and these have been developed and delivered to the institutions.

D. Skills Development Fund (FUNDEC).

Component D involved the establishment of a Fund for the Development of Professional Skills (FUNDEC - Fundo para o Desenvolvimento de Competências Profissionais), specifically aimed at promoting innovation and initiatives for the improvement of quality and relevance of training, and at increasing access of the out-of-school population in the rural areas (especially women) to TVET. The fund is accessible to public and private training providers on a competitive basis, through an annual call for proposals. So far, seven annual cycles of calls for proposals, followed by the approval of grants, have been completed. The implementation of the sub-projects financed through FUNDEC has progressed satisfactorily. Most beneficiaries have carried out the proposed activities as planned. COREP has developed a system for tracking the sub-projects and mapping the difficulties faced by each beneficiary institution.

1.4 Achievements of the TVET Reform Programme

The principal achievements of the PIREP reform programme are listed in the table below.

- Establishment of the decision making board (COREP) with the involvement of Government, Private Sector, Trade Unions and Civil Society.
- Establishment of Sector Technical Advisor Committees (STAC), standards development teams and groups of representatives from Education, Labour, Industry and Civil Society.
- National Vocational Qualifications Framework developed.
- Guidelines to develop Units of Competency and the related Curriculum materials.
- Credit Transfer and Accumulation System developed.
- Assessment System developed.
- Registration and Accreditation of providers and qualifications system developed.
- Quality Management System developed.
- Teachers and School Managers trained.
- New CBT courses being developed and implemented in Agriculture, Administration and Management, Tourism and Hospitality and Industrial Maintenance.
- Rehabilitation and equipment of 11 Institutions concluded.
- Over 40.000 Mozambican citizens have benefitted from skills development programmes in rural areas via a Competitive Professional Skills Development Fund (FUNDEC).
- A consultative governance and institutional framework for TVET has been established, with representation from government and key stakeholders responsible for leading the reforms and governing the reformed system.
- A diversified funding system to sustain and support the new system has been developed.

- A planning, monitoring, and evaluation framework to support the development of coherent skills strategies and to evolve TVET towards an outcomes based system has been planned.
- A decentralized system of management for public TVET institutions has been implemented to ensure that local delivery mechanisms are responsive to industry demands and aligned with training needs of labour market segments.

2. Sustainable Development and Gender analysis

2.1 Sustainable development in the TVET system

The principle of sustainable and inclusive development is based on the belief that education is a fundamental human right that "contributes to economic growth, improved health, women's empowerment, gender equality and strengthened social cohesion as well as [mitigating] inequality and the reduction of poverty" (UNESCO, 2013). The post-2015 Sustainable Development Goals include poverty eradication, lifelong learning for all, gender equality, food security, jobs and livelihoods, and environmental sustainability. COL is committed to Learning for Sustainable Development and to promoting these goals, this commitment having been strengthened by its new Strategic Plan for 2015 and beyond. In this plan, COL emphasizes three principal areas in which sustainable development may be promoted through education and TVET: economic growth; environmental conservation; social inclusion.

Economic growth

There are several sectors in which the Mozambique economy has the potential for exceptional economic growth. Agriculture is still the mainstay of the economy and the country has a great potential for further growth in the sector. Agriculture employs more than 80 percent of the labour force and provides livelihoods to the vast majority of over 23 million inhabitants. The main cash crops are sugar, copra, cashew nuts, tea, and tobacco. The TVET sector has an important role to play in basic training for these sectors and other agricultural, fishing and forestry activities. Professional Schools like the one visited in Massinga are contributing to this sector through courses in carpentry and furniture making which impart new skills to enable the local population to exploit the raw materials from local forests, and courses in modern approaches to sustainable fishing and seafood farming that will help to ensure that the resources in the coastal waters are sustainably exploited.

A second growth area is mining and with it many related areas of manufacturing and processing of raw materials. There are large mineral deposits, most as yet to be exploited. Minerals currently being mined include marble, bentonite, coal, gold, bauxite, granite, titanium and gemstones. Mozambique expects to become the world's largest coal exporter and is investing heavily in infrastructure projects to access its coal reserves. It also has the fourth largest reserves of natural gas in the world. These opportunities attract investors from all over the world, in addition to home based mining conglomerates. The mining companies bring new, previously non-existing, needs for specific skills and competencies. The TVET sector is challenged to address these needs. The sector is slowly catching up with the demand, but much still has to be done to meet the ever changing and developing needs of this economic sector. The Industrial Institutes, such as those visited in Beira, Nampula and Maputo must be able to offer new training programmes geared to the needs of the newly emerging industries.

Tourism and the associated hotel and catering industries represent another growth area. The tourism sector declined sharply after independence from Portugal, but has recently been on the rise

once more. It is fast developing, although it is still performing below potential. In this area, the Commercial Institutes, such as the ones visited in Maputo, Beira and Nampula, have an important role to play. All of these offer skills training for jobs in the hotel, restaurant and bar sectors. But they could do more to prepare personnel for newly emerging areas of activity such as eco-tourism.

Social inclusion

The World Bank defines social inclusion as the process of improving the terms for individuals and groups to take part in society. Social inclusion aims to empower poor and marginalized people to take advantage of burgeoning global opportunities. It ensures that people have a voice in decisions which affect their lives and that they enjoy equal access to markets, services and political, social and physical spaces. Social exclusion may prevent some individuals from participating, or may reduce their chances of success even if they do participate, due to a variety of factors including poverty, race, ethnicity, gender, religion, place of residence, disability status, age, HIVAIDS status, sexual orientation or other local social factors such as caste, withdrawal of citizen status, etc.

Social inclusion is a central tenet in COL's new Sustainable Development strategy. One approach is to address the causes of social exclusion through its educational programs and projects. It is of course important to measure the impact of such projects by tracking relevant indicators. Examples of some measures, which have been used in social inclusion projects, include: Human Opportunity Index; Human Development Index; Multidimensional Poverty Index; Social Progress Index; Social Institutions and Gender Index.

TVET, as indeed most educational programmes, may contribute to positive change in all these indicators by means of the practical application by ex-students of relevant knowledge, skills and (especially) attitudes acquired during the teaching – learning process. However, in addition to such outcomes of the educational system which impact society in general, social inclusion must also be present in all aspects of the educational process itself. According to its statutes and regulations, the TVET sector of Mozambique espouses and protects social inclusion with respect to most of the factors mentioned above. However, not all of these are tracked and measured by means of appropriate indicators. One factor of especial importance is the inclusion of gender. Here there are specific actions to promote gender equality and data that follow up the outcomes. This is further analysed in the next sub-section.

Environmental conservation

On a recent consulting mission which involved air travel from Mozambique to Rwanda, the consultant, at the outgoing airport in Maputo, was approached by several entrepreneurs who offered to wrap his luggage in unending metres of plastic – their arguments were based on protection of the bags against damage and security of the contents. On arrival in Kigali, the Rwanda customs official handed him a knife and asked "can you please remove this plastic". Having done so, the consultant waited for the official to open the luggage, but this did not happen – instead, the customs official said "I just want to ensure you leave the plastic here so it is disposed of without any damage to the environment." This example, although maybe trivial, illustrated a marked difference in attitude and behaviour with respect to the question of environmental protection. Without a doubt, education and training play an important role in promoting and enabling such a change.

Mozambique can however offer examples of environmental protection goals being addressed by means of education and training. The Eduardo Mondlane University (UEM) runs renewable energy studies in a number of graduate level courses, which has helped provide expertise to many energy-related government departments and agencies. The Faculty of Engineering of UEM, responsible for training engineers in 4 different fields, namely, Mechanical, Electrical, Civil and Chemical, is involved

in the SOLTRAIN project to enhance solar thermal technology in Southern Africa. SOLTRAIN is focused on solar thermal systems because solar radiation levels in Southern Africa are high, and these systems can readily be manufactured or assembled there. Solar thermal systems like solar water heating have a huge potential to alleviate the serious problems of unemployment, power supply, energy costs, and pollution.

Another new player soon to enter the TVET sector is the FIPAG Academy for Professional Development in water and sanitation service delivery in Mozambique. Through the establishment of the FIPAG Academy, the National Urban Water Asset Holding and Investment Fund (FIPAG) hopes to contribute to the improvement of management, services and infrastructure in the water and sanitation sector in Mozambique. The target audiences for the Academy are FIPAG staff and participants in FIPAG programmes, water and sanitation services providers, other training institutions, consulting companies and non-governmental organisations in Mozambique. FIPAG currently has a total of about 2500 employees. However, it is estimated that the country needs nearly 6000 workers in water and an additional 1600 in the field of sanitation. FIPAG contributes to the preparation of national policies, including the area of conservation of resources, and is an important part of the Government of Mozambique's strategy to reduce poverty by investing in water supply and sanitation infrastructure. FIPAG is also contributing to the development of the TVET system by working with PIREP to develop National Vocational Qualifications (NVQ) and then to develop relevant curricula, course plans and learning materials, which will be made available to all TVET institutions interested in offering training programmes for this sector.

Finally, DINET and the Ministries jointly responsible for the TVET sector are well aware of the importance of environmental protection and their role in promoting it. The last day of the work of XXV ENDET conference of TVET institution directors (see **Appendix 5**) coincided with the celebration of "World Environment Day". The closing session of the conference was therefore used as an opportunity to promote reflection on best practices for the protection of ecosystems and maintenance of different forms of life. In this context, the TVET sector has the challenge of promoting initiatives, courses and curricula that "promote the use of renewable and sustainable technologies, for the protection of the environment and maintenance of life on Earth".

2.2 Gender analysis

The World Bank has reported that in general girls are underrepresented in TVET institutions in Mozambique. Since girls represent at least half of the school-going age population, this means that the potential for increasing their profitable participation in the national economy is not fully exploited. TVET imparts market-ready skills and the added participation of girls in TVET can increase the overall economic productivity of the labour market. According to the World Bank reports, *"exerted efforts are necessary to attract girls to technical and vocational education, starting with the courses that generally appeal most to girls (commercial, management, administrative, hotel and tourism) and gradually attracting them to the courses that currently mostly draw boys (e.g. engineering courses)."* World Bank, 2006

The officially verified figure for the proportion of females in the formal, public-sector, secondary vocational training system in 2011 was 34.1%. However, it is more informative to compare enrolment across the three levels of the TVET system, and also with the enrolment figures for general education, as shown in the table below (data for 2009).

•	Primary school enrolment, 1st cycle (grades 1-5):	4,299,638	(47.5% female)
•	Primary school enrolment, 2nd cycle (grades 6-7):	772,240	(45.2% female)

General secondary school enrolment (grades 8-10): 477,451 (45.3% female)

٠	General secondary school enrolment (grades 11-12):	85,184	(42.4% female)
•	Technical secondary schools enrolment (Elementary):	5,810	(38.8% female)
•	Technical secondary schools enrolment (Basic level):	23,667	(36.5% female)
•	Technical secondary schools enrolment (Medium level):	7,848	(24.4% female)

One may note that at all levels of the educational system the participation of girls is below the approximately 50/50 ideal expressed by the World Bank. In the general education part of the system, the discrepancy is not so large – a difference of 10 points or less – a male/female ratio of approximately 55/45. In the TVET sector the discrepancy is greater. At the Elementary and Basic levels the difference is a bit less than 20 points in favour of the boys – a male/female ratio of about 60/40. At the Medium level, the discrepancy is serious: a male/female ratio in the region of 75/25.

Further insights on this issue may be gained by comparison of the ratios in different competency areas, for example in technical courses like engineering compared to administration/management courses, or courses preparing human resources for the hotel and tourism sector. One case example that illustrates the differences that may exist is the situation at the Massinga Professional Education School (one of the institutions selected for the proposed eLearning project). Massinga is a small town situated on the coast and so popular with tourists, in a region which is partly agricultural but also has large areas of forests. The Professional Education School offers Basic-level qualifications which will lead to employment opportunities in the region. Notable courses are: carpentry and furniture making skills; restaurant, kitchen and bar skills and procedures. Not surprisingly, the male/female ratios in these two competency areas are quite different. The consultant counted the number of males and females in the classes and workshop sessions being held on the day of his visit and photographed some of the activities. As the following photographs illustrate, in the woodworking classes there were only two girls in a class of over 20 students – a male/female ratio of around 90/10. But in the restaurant and kitchen courses, the girls outnumbered the boys by about 2 to 1 – the male/female ratio was in the region of 25/75.



Photo 1. Carpentry workshop at Massinga school (Two girls in a class of twenty students)



Photo 2. Carpentry workshop at Massinga school (Two girls in a class of twenty students)



It therefore seems that the first stage of gender mainstreaming mentioned in the World Bank reports is being achieved, at least in part – females do participate with high frequency in training for jobs that are typically / frequently performed by women. But there is still quite some way to go to attract females into training programmes for qualifications that are typically seen as "a man's job".

One further question to consider is whether the gender ratios are moving in the desired direction – whether the male/female ratios are moving closer to the ideal. Unfortunately, the relevant data for the last years is not yet officially available. A new electronic database, with up to date and officially verified data, will soon be available online, but at this time it is not yet released for public access – even DINET officials who commissioned the development of the database do not yet have official access to the data until it has been checked and verified by competent authorities. However, analysis of the situation in specific Industrial and Commercial Institutes revealed that although there are quite sharp differences in the numbers from one Institute and another, the general trends do not show significant progress towards the "50/50" ideal situation. One typical set of data from one of the schools selected for DINET's eLearning pilot project – the Nampula Industrial and Commercial Institute – illustrates several interrelated and intertwining trends.

Unlike the Massinga school, which works exclusively at the Basic level of TVET, The Nampula school works at both the Basic and the Medium levels – or rather, it DID work at both levels until 2014, but had been reducing its Basic-level offerings in the last few years and in 2015 stopped offering the Basic-level courses altogether. The table below shows that the female-participation percentages, and also the changes over time in these percentages, were different at the different TVET levels.

	2012		2013		2014		2015	
	Enrolled	% fem.	Enrolled	% fem.	Enrolled	%fem.	Enrolled	%fem.
TVET Basic level	954	37.2%	560	38.4%	217	44.2%	0	n/a
TVET Medium	939	21.2%	919	19.9%	968	16.2%	1068	18.2%
Total students	1893	29.3%	1479	26.9%	1185	21.6%	1068	18.2%

Table 2. Gender differences in course participants across time and TVET levels at Nampula Institute

3. eLearning in the context of TVET in Mozambique

3.1. Slow progress from "offline" ODL to eLearning

The formally correct name for TVET (and/or VET) in Mozambique is "Professional Education" and the meaning given to it is broad. For example, the invited directors who participated in the recently held annual conference included representatives of the three IFAPA public servant training institutions, the police academy, primary and secondary school teacher training institutions, and many other organizations in addition to the technical schools, Industrial, Commercial and Agricultural Training Institutes. Taking this broad definition, we note that the primary teacher training organization IAP (Institute for Teacher Upgrading) has the longest history, stretching back to the early 1980's and extending to this day – except that now, under the new name of IEDA (Institute for Open and Distance Education) it offers ODL programmes for secondary school teacher training, some courses last-year high school student and has recently started to use eLearning.

Over the last decade, several public-sector universities, already previously using print-based ODL systems, have also started to implement eLearning. It is now the turn of the public-sector TVET institutions to follow their example. The project currently being proposed by DINET (see **Appendix 2**) will be the spearhead of this new development. Therefore it is important that it is well planned and implemented, with both training effectiveness and long term sustainability in mind.

More information on the above mentioned pioneering projects and on the early days of ODL in Mozambique are included in **Appendix 3**.

3.2 Current situation as regards the use of eLearning in TVET

The COL definition of elearning is broad:

"eLearning can involve a variety of different technologies used in different ways that extend all the way to fully online courses, but it is, by definition, about integrating learning technologies into teaching and learning, not simply using them to enhance existing approaches. It implies re-thinking and re-designing learning and reorganizing institutions".

This statement suggests a continuum of technology-supported learning processes, starting from learning in a conventional manner but with "offline" use of some electronically stored materials, to the use of some online resources as a component of the learning system, to fully online learning. The first two forms of technology supported learning have been features of some of the early ODL projects in Mozambique. However, due to previous limitations of Mozambique's Internet services, it is only in the last decade, and then only in some more favoured geographical locations, that it has been possible to implement online eLearning in a viable and sustainable manner.

The above situation is illustrated by the experience of the Institute of Bank Training in Mozambique (IFBM), based in Maputo, who started to offer some online courses about ten years ago, on topics selected to appeal to bank employees working in banks nationwide, but found that the bulk of their online students were in fact Maputo residents quite able, in principle, to attend the regular courses at the Institute. In 2010, the IFBM did some research on this phenomenon and found that although there were several underlying reasons, an important one was frustration with the quality of connectivity to the Internet anywhere outside of the capital.

In addition to the IFBM, there are now several other private TVET institutions offering a limited selection of courses online. Examples exist in all three capital cities to be involved in the DINET project. As an example of the current situation, here are extracts from two recently published newspaper articles about a recently inaugurated institute that distributes its courses via eLearning:

The Council of Ministers held, on July 8, 2014, its 17th Ordinary Session. In this session, the Government considered and approved the decree authorizing the request of the African Institute for the Promotion of Distance Education to create the Higher Institute of Science Distance Education, hereinafter referred to as ISCED. The ISCED is designed to improve access to higher education having as a prime target young people and adults of both sexes (promoting gender equality) in rural areas and other groups not served by the normal methods of classroom teaching. ISCED is based in the city of Beira and has several regional registration centres, namely: Maputo; Manhica; Xai-Xai; Beira; Chimoio; Tete; Mocuba; Nampula; Nacala; Pemba; Lichinga.

Since June of 2015, the Students of ISCED receive free data cards. The cellular provider MCEL and ISCED have signed an agreement under which students of that institution will benefit from free data cards, to facilitate their access to the internet. A total of 2,500 students in higher distance learning will benefit from prepaid data cards with 500 megabytes each, to be provided by MCEL. As part of this partnership, which aims to facilitate access to the curriculum of the institute as well as carrying out investigative work on the Internet, ISCED expects, by the end of next month, to distribute free tablets to all its students.....

Among the tertiary-level institutions offering VET programmes, the (private sector) Polytechnic Institute (previously named the Instituto Superior Politécnico e Universitário – ISPU) has been a leader, with a well-structured ODL department operating for the last 15 years and some online courses offered to their students for the last ten years or so. In the public-sector, the Eduardo Mondlane University and the Pedagogical University, who have used ODL (in correspondence course modalities) for nearly twenty years, have recently offered some secondary school teacher training courses online, using Moodle as the delivery platform. These projects are still quite low-key and tend to serve fully registered students as an additional component to on-campus study – a "blended learning" approach. But fully online courses for off-campus students have so far been hampered by the above mentioned deficiencies in national ICT infrastructure.

3.3 Next steps: a project to introduce eLearning in five TVET Institutions

There are vast improvements in ICT infrastructure currently in the process of implementation. The cellular networks in particular are now approaching total coverage of the country and cheap but versatile smartphones and tablets are making the Internet much more accessible. This is important in the context of DINET's proposed project (described in **Appendix 2**).

Five TVET institutions have been selected by DINET to participate in the pilot project. They are:

- The Industrial Institute of Maputo;
- The Commercial Institute of Maputo;
- The Industrial and Commercial Institute of Beira;
- The Industrial and Commercial Institute of Nampula;
- The Professional School of Massinga.

The map below identifies the positions of these schools to show their strategic distribution in all three regions of Mozambique (South, Central and North) and in different industrial and commercial environments serving different types of client organizations and student categories. Further

information about these institutions, the programmes they offer and the relevant resources and infrastructure they possess is presented in the institutional Profiles included in Section 5. The following paragraphs give some additional information relevant to the proposed eLearning project.



Figure 1. Map of Mozambique, showing the location of the 5 participating Institutes

This map shows the regional distribution of the five Institutes that have been selected to participate in the pilot project.

The Industrial and Commercial Institute of **Nampula** is located away from the coast in the Northern region of Mozambique.

The Industrial and Commercial Institute of **Beira** is situated on the coast, in the Central region.

The Professional School of Massinga is in a semi-rural and coastal setting midway between Beira and Maputo, 60km north of **Inhambane.**

The Industrial and Commercial Institutes of **Maputo** are two separate schools in the capital city.

Although the bulk of the TVET institutions that will participate are situated in Provincial capitals (Massinga is the exception) the project's aim of providing access to training opportunities to students who cannot attend the regular courses implies that many candidates will be living and/or working in more remote locations. Thus, in many respects, the proposed pilot project will be breaking new ground.

The internal ICT infrastructure of the participating institutions in the pilot project proposed by DINET is in general relatively up-to date and adequate for the current uses of computing in TVET institutes. All five Industrial and Commercial Institutes have computer laboratories equipped for general computer end-user activities. All the labs have internal networks linking the computers and these networks are linked to the Internet. The laboratories are in regular use, are well cared for and all five institutes have technical staff responsible for ICT maintenance.

Photo 5. Computer lab, Industrial Institute, Maputo – alternative layout



Photo 4. Computer lab, Nampula. Typical layout (but unique dust covers)





Photo 6. Typical "distance education lab" – IEDA

Most of the remainder are installed in general education (not TVET) institutions. It is important to note that the Commercial Institute of Maputo and the Massinga School of Professional Education do not have these special rooms (however, as discussed in later sections of this report, this may not be all that important a factor for the proposed project).



Photo 7. Videoconference screen showing linkup of 5 institutions (IEDA)

Three of the five institutions (Industrial Institute of Maputo and the institutes in Beira and Nampula)

laboratories". These are essentially Videoconference

also have so-called "distance education

network of 45 such rooms.

rooms, with the added feature of computers installed at the student desks (see photographs 6 and 7). These labs were installed almost two years ago, as part of an earlier technical assistance project, by the Government of China. They are three of a

These 45 videoconference rooms are linked to each other via the Institute of Open and Distance Education (IEDA) to form a national educational videoconferencing network. IEDA is equipped and

has staff trained to maintain the system and to organize and coordinate meetings or classes that link up several of the rooms. On his visit to IEDA, the consultant participated in a demonstration "simulated lesson" which linked up five of the videoconference rooms located in five towns in different parts of Mozambique. The demonstration was successful technically. No breakdowns or loss of signal were experienced and the sharing of data, including video clips, occurred smoothly.

IEDA is mentioned here for another reason. The network of conferencing rooms may also be used as individual or group online study labs, utilizing the networked computers. To facilitate this, IEDA was equipped with servers that have a large amount of excess capacity to store, distribute and manage data, application software packages and any form of digital courseware.





Photo 9. IEDA: Server for delivery and management of online courses

It is of course possible, in principle, to house courses in this server and allow access to them to any end-user with sufficiently adequate connectivity to the Internet. Thus, IEDA could act as the hub of an eLearning system that serves students at their place of work or at home, and not necessarily located in an educational or TVET institution.

Photo 8. IEDA: Part of storage room of print-based modules for ODL

4. Stakeholder analysis

4.1. Government Departments

4.1.1 DINET

DINET is of course the principal stakeholder in the proposed pilot project. The DINET offices are still located in the Ministry of Education building, although the recent changes in ministerial structure have transferred responsibility for TVET (and therefore DINET and its staff) to the new Ministry of Science and Technology, Higher Education and Technical and Professional Education (MCTESETP). The structural changes are quite recent and the lines of communication and collaboration between the two ministries now responsible for different sectors of the public education system are not yet clearly defined. One example relevant to the currently proposed ODL project is that although the TVET institutions who will participate in the pilot project report to DINET, and therefore to this new ministry, the organs responsible for regulating distance education (INED) and for planning and implementing ODL projects (IEDA) continue in the "old" Ministry of Education, which is now renamed the Ministry of Education and Human Development (MEDH). When asked whether there was a possible overlap in responsibilities – or in the understanding of the actual responsibilities – between "technical and professional training" and "human development", the DINET staff admitted that the exact distinction between these roles and responsibilities is still being debated and defined.

4.1.2 MCTESETP

MCTESETP is the Portuguese abbreviation for the new *Ministry of Science and Technology, and Higher, Technical and Professional Education*. As its name implies, the MCTESETP is now responsible for promoting, implementing, evaluating and regulating the TVET sector. The immediate tasks facing MCTESTP in the area of TVET are defined in the **Vocational Education Act** passed on September 23, 2014. This act defines the objectives, structure and functions of all the key components of the TVET system, including the components introduced (experimentally up till now) by the program of TVET system reform (PIREP), such as the use of NVQs and competency-based curricula as a means of defining and achieving performance standards and quality criteria. It also establishes and defines the functions of a new permanent National Authority for Professional Education (ANEP) which takes over and renders permanent the functions and achievements of the TVET reform programme PIREP.

4.1.3. MEDH

MEDH is the Portuguese abbreviation for the recently reorganized Ministry of Education, now renamed the *Ministry of Education and Human Development*. As its new name implies, "human development" has been added to its responsibilities in exchange for the components which have been transferred to MCTESETP. But as the above paragraphs indicate, it is not yet clear whether this addition will in effect include some aspects of what could be considered parts of the TVET component. What is clear however, is that the chief organs that are responsible for regulating, coordinating, implementing and supporting ODL (INED and IEDA) will continue to report to MEDH. Therefore, if not for TVET reasons then definitely for ODL reasons, the two ministries will need to work collaboratively on projects such as the one currently proposed by DINET. Indeed, the DINET proposal specifically mentions INED and IEDA as partners in the pilot project.

4.1.4. INED

The National Institute for Distance Education (INED), being the ODL regulating body concerned with issues such as quality, will necessarily be involved as an evaluator of the proposed project before it passes to the stage of implementation and then again during the later stages of execution of project activities. The consultant met with the Director of INED, António Franque, in order to discuss how

INED perceives the current proposal prepared by DINET and the later role of INED in supporting the project. Given that the proposal document prepared by DINET was as yet in general outline form, António Franque did not make any specific suggestions but requested to see the proposal when it is developed into a more detailed plan of action. He also suggested other potential sources of both technical and pedagogical support which may be worth exploring. These included the few remaining Chinese personnel who were involved in installing the distance learning laboratories two years ago, the Portuguese consulting firm TRIÓNICA that has supplied a personalised, Moodle-based, eLearning course management platform, called LearnMate, to MEDH and has already given some end-user training. He also indicated some other sources of technical know-how and support in relation to ICT in general and Moodle in particular (e.g: the Mozambican company CENFOSS – see **Appendix 4**).

4.1.5. IEDA

The Institute for Open and Distance Education (IEDA) is the new name for the Institute for Teacher Upgrading (IAP) which was recently upgraded to be the Ministry of Education's principal ODL project executing agency. It has recently moved to purpose-built premises just outside Maputo, where there is ample room for expansion. IEDA was involved in the Chinese-cooperation project that installed an educational videoconferencing network and also in the acquisition by MEDH of the software and user licences for the LearnMate eLearning platform. This has been installed at various sites, including IEDA. The end-user training which was given in July 2014 by the supplying company, TRIÓNICA, was hosted by IEDA. The Learnmate platform, as supplied by TRIÓNICA, already has a suite of courses in the area of electricity and electronics installed. These courses, some in Portuguese and others in English language, are therefore in principle available to students who have an access code. The teachers from various educational institutions who participated in the end-user training last year are all registered in the system, with full rights as students, teachers and course developers. As these teachers were trained at IEDA and the Ministry's LearnMate platform is installed on the IEDA server, the consultant, during his visit, inquired whether much use was being made of the available course materials and if any new courses had been developed. Apparently, only a small number of the participants had made any use of the platform after the training and, although some course development activities were initiated, no new courses have reached the stage of regular use by significant numbers of students.

The consultant then mentioned that, when visiting the institutes who are to participate in the DINET pilot project, he learnt that although the "distance education laboratories" (the videoconference rooms installed by a Chinese project) have been available for two years, and one year later (i.e. one year ago) one technical support staff member from each of the institutes went to China for an administrator training course, there has been little or no use made of the rooms to date. He therefore inquired whether some of the other institutions with such videoconferencing laboratories are making use of them. Apparently IEDA is utilizing the network to run a programme of teacher professional development in some of the educational institutions (but the TVET institutions are not participating). The opinion at IEDA is that such use by managers and teachers is a more useful and viable use of these rooms than regular use to teach regular classes.

4.1.6. ISDB

The Dom Bosco Higher Institute (Instituto Superior Dom Bosco – ISDB) is also identified in the DINET proposal as a partner in the proposed project. As the leading technical teacher training institution in Mozambique, ISDB may contribute to the detailed planning of the professional development of the teachers who will be involved in the design and development of eLearning courses and course materials. In addition, the ISDB is currently implementing a teacher training programme via eLearning, using Moodle as the delivery platform (this project has been supported in part by the Commonwealth of Learning). Therefore, several members of the ISDB faculty have faced the same

"learning curve" as will be faced by the TVET teachers involved in this proposed project and the ISDB as a whole has faced many of the practical problems and challenges that are awaiting the Industrial and Commercial Institutes. The elearning implementers at the ISDB may surely teach the staff from the Institutes many lessons on how to integrate elearning and on the way, may learn some things of value for their own institution's elearning programme development.

4.2 Development partners active in TVET sector

4.2.1 Italian Cooperation

The Italian Government's funding agency, known in Mozambique as the "Cooperação Italiana", supports TVET projects in several Industrial and Commercial Institutes through a programme called **PRETEP.** This programme of cooperation is active in several educational sectors, including TVET. The areas of activity of PRETEP include:

- Training and development of TVET teachers and managers;
- renewal and upgrading of infrastructure;
- supply of equipment, training materials and means of transport;
- creation of a fund to support the operating expenses of technical schools and institutes;
- installation of two "community centres for competency development";
- assistance in the management of schools and institutes;
- strengthening of the institutional capacity of DINET.

In addition, although the PRETEP project is not directly involved in the design and development of new competency-based curricula, it has supported the activities of the PIREP project in this area, in several TVET institutions including: Commercial Institute of Maputo (tourist guide; hotel reception; kitchen; restaurant and bar); Professional School of Massinga (restaurant and bar). These two institutes are among the list of five proposed by DINET for inclusion in the COL partnership.

The Cooperação Italiana met with the consultant to learn more about the proposed project. Apparently they also have been thinking to maybe introduce eLearning into the TVET projects which they support. They expressed interest in potentially collaborating on a future project.

4.2.2. UK Government (DFID)

Both INED and the Italian Cooperation suggested that contact should be made with Martin Johnston, Private Sector Development Adviser in Mozambique, for the UK's Department for International Development (DFID) because of DFID's current involvement in supporting some new TVET initiatives and past involvement in supporting ODL projects in Mozambique. A meeting was arranged, the outcome of which was that Martin Johnston doubted whether DFID would be interested in participating in the proposed pilot project (other than as interested observer).

5. Readiness of the proposed eLearning pilot institutions

The consultant had two opportunities to collect information about the five Institutes that DINET proposes to involve in the pilot project. The first was a series of individual meetings with each of the five directors, arranged during the three-day conference of TVET institution directors in Chimoio. The second was during visits made to each of the institutions.

5.1. Data collection

5.1.1. Interviews with Directors

The purpose was to:

- Explain the proposed project and the purpose of the visit to the institution;
- Fix the dates and times of visits to the Institutes.
- Assess the level of interest, motivation and commitment of the directors to the project;
- Respond to questions and address any concerns expressed by the directors.

With reference to the latter two items, all five directors demonstrated positive attitudes to the prospect of participation in the project. They varied a lot in terms of their prior knowledge of how the project would impact the institution in terms of time and resources that would have to be made available. The main areas of concern were to do with:

- the state of their infrastructure would they need to have additional computers, servers, better Internet access, etc.... and who would pay for such upgrades;
- what would be the time involvement of staff members working on the project;
- How many staff would be involved and what skills or experience should they have.

It was also explained that the selection of staff to participate in the project, although ultimately done by the directors, may usefully be informed by the attitudes and experience shown by the teaching staff who would be interviewed during the site visits. Therefore, it would be best that as many staff members as possible attend the on-site meetings. The consultant will attempt to provide feedback to the directors on which of the staff showed most promise as members of the project team.

5.1.2. Visits to the Institutions

The following institutions were proposed by DINET and visited for an analysis of their readiness for eLearning programme development and delivery:

- 1. Industrial and Commercial Institute, Beira
- 2. Industrial and Commercial Institute, Nampula
- 3. Industrial Institute, Maputo
- 4. Commercial Institute, Maputo
- 5. Professional School, Massinga

At each institution, the following activities were carried out.

- 1. Visits to the existing computer laboratories and other ICT infrastructure;
- 2. Visits to the "distance education laboratories" (where these exist);
- 3. Interviews with technical staff responsible for maintenance of ICT equipment;
- 4. Visits to all relevant workshops and laboratories (focus on electricity and restaurant/bar)
- 5. Interviews with relevant department heads to review the curricula and courses offered;
- 6. Group meetings with a sample of relevant teachers (of electricity or restaurant/bar).

5.2 Institutional Profiles

The following descriptions of the five institutions are presented here in the order in which the visits were made.

5.2.1. Industrial and Commercial Institute, Beira

Location:

This Institute is located within the city of Beira, at Rua 24 de Julho 1713, Beira. This is an older part of the city that has many small industrial and commercial businesses. The Institute is housed in purpose-built premises, well laid out as several "aisles" of classrooms and workshops. There is however little room on the site for future expansion.

Principal contact:

The Director, Maria Bernardete Cipriano Roque, was already interviewed and briefed as to the goals of the visit during the Chimoio conference the previous week. She had prepared her staff for the visit and she participated personally in the large-group meeting with teachers of electricity courses and ICT technicians. Email: <u>Mariabernardete02@yahoo.com.br</u>. Tels: 8243 92770 / 8443 92770.

Region served:

Beira is the capital of Sofala Province, in the central region of Mozambique. It is the second city in terms of size and commercial/industrial importance, a major seaport and a popular tourist resort.

Programmes:

The principal programme in the Industrial area is Industrial Maintenance, which includes competency areas such as: mechanics; welding, lathe and milling machine work; domestic and industrial electrical installations: etc. The Commercial area offers programmes in hotel and catering and tourism, as well as business administration, secretarial and other general skill areas. It is intended by DINET that this institution will develop elearning programmes in electrical maintenance.

Students served:

There are currently just over 2,000 students registered in full time courses, more or less equally distributed between the industrial and commercial areas. In addition, the Institute offers a variety of short courses varying from one week to several months duration. Some of these are routinely scheduled and others are given on-demand to staff of local business organizations.

Relevant teaching resources:

As this Institute is selected to develop and implement eLearning in the area of electrical maintenance, only the Industrial area was visited, with special emphasis on the workshops and laboratories used for this discipline. There are two workshops equipped for work on the theory of electricity, the design of electric motors and generators, and practical exercises in the installation and testing of electrical circuits, maintenance and repair of motors, generators and (domestic and industrial) electrical equipment.

ICT laboratories:

The Institute has one "conventional" computing laboratory, with 32 computers installed in rows on benches, plus a master computer and data projection equipment. The room is used as a teaching room, but the layout of the benches is more appropriate / convenient for individual computer use,

as many of the stations have an obstructed view of the front screen. The computers are networked to each other and to the Internet.

The Institute also has one of the 45 "distance education laboratories" that were installed in 2013 by a Chinese technical cooperation project. The room is arranged and equipped to serve several functions: videoconferencing room; teaching classroom; individual online research or study. However, till now, the room has seen little use – it is not used for any regular course teaching and is not available for individual use by students. The videoconference facilities have been used on occasion, but only on some special occasions.

Staff interviewed:

One large-group meeting was held, attended by the Director plus 13 staff members: 10 teachers employed in the area of electrical maintenance; 3 ICT staff, all teachers of computer related courses, but one also trained and qualified as an ICT maintenance technician and another trained (3 weeks in China) in the use and maintenance of the videoconferencing and other computer equipment installed in the "distance education laboratory".

The aim of this meeting was to assess the participants' level of interest in participating in the pilot project, their understanding of its goals and procedures and what it will involve from the participants, any relevant prior experience and therefore the training /development needs of the team. Interest was assessed as generally high. Understanding of the project and what participants will do was adequate.

Prior experience relevant to the proposed project was self-assessed as follows:

- Little experience of learning materials development (other than conventional lecture notes);
- Only 2 out of 13 had any experience of studying via eLearning;
- None of the participating teachers had any prior experience of developing materials for, or of teaching or tutoring any form of ODL course.

The general meeting was followed by a discussion with the three ICT staff members. The main points that emerged were as follows:

- The conventional computer laboratory is used regularly and intensely by many course groups, so scheduling available time is sometimes an issue;
- Although the lab is used for individual research and projects by students, the time available is restricted due to class-group use, so in effect, only research and projects that are set as assignments by class teachers tend to get adequate lab time allocated;
- The maintenance of the computers was considered adequate, although the equipment is getting rather old on the day of the visit, 3 out of 32 computers were not operational;
- Internet connectivity was assessed as "reasonable most of the time" (3 on a 5-point scale);
- No clear reason was given for the lack of use of the "distance education laboratory" but it seemed that the main reason was a lack of any project or programme that would require the linking of student groups in this institution to student groups in other localities. The technical staff do perform regular maintenance routines and tests (including practice links to other similar laboratories) and guarantee that the lab is fully functional, but they say that they are awaiting "instructions from the top" as regards the use of the laboratory.

5.2.2. Industrial and Commercial Institute of Nampula

Location:

This Institute is located within the town of Nampula, on Rua dos Continuadores, right next door to a major Secondary and High School. The immediate locality includes other educational institutions as well, most of them relatively recently built. The Institute's own site is spacious, with room for some future expansion. The buildings are well designed for their purpose.

Principal contact:

The Director, Carlos Migode, was interviewed and briefed as to the goals of the visit during the Chimoio conference the previous week. He explained that he would not be at the Institute on the dates of the proposed visit, but would contact and brief Mr Arusse Anli, the Assistant Director. The contact details for the Director are: <u>migode.s@gmail.com</u>; 840656587 or 826654290. The mobile phone number of the Assistant Director is 842429490.

Region served:

Nampula is the capital of the Province of the same name, in the Northern region of Mozambique. It is a relatively small town in a region that is mainly agricultural, but with a growing number of small and medium size industrial and commercial companies.

Programmes:

The principal programme in the Industrial area is Industrial Maintenance, which includes competency areas such as: mechanics; welding, lathe and milling machine work; domestic and industrial electrical installations: etc. The Commercial area offers programmes business administration, secretarial and other general skill areas.

Students served:

There are currently just under 1,000 students registered in full time courses, with nearly two thirds of these in the industrial area. In addition, the Institute offers a small number of short courses varying from one week to several months duration. A few of these are routinely scheduled but the majority is given on-demand to staff of local business organizations.

Relevant teaching resources:

As this Institute is selected to develop and implement eLearning in the area of electrical maintenance, only the Industrial area was visited, with special emphasis on the workshops and laboratories used for this discipline. There are two workshops equipped for work on the theory of electricity, the design of electric motors and generators, and practical exercises in the installation and testing of electrical circuits, maintenance and repair of motors, generators and (domestic and industrial) electrical equipment. The level of sophistication of the equipment in these workshops was somewhat lower than encountered in the workshops of the Beira Institute,

ICT laboratories:

The Institute has two "conventional" computing laboratory, with 30 computers in each. The layout of both labs was the same as encountered in Beira, with the computers installed in rows on benches, plus a master computer and data projection equipment at the front, so the same comment on the layout as a group teaching room applies. Both labs are well cared for, with protective cloth covers on all computers when not in use and detailed end-user procedures for care and protection of the equipment posted on the walls of both rooms. The computers are networked to each other and to the Internet.

The Institute also has one of the 45 "distance education laboratories" that were installed in 2013 by a Chinese technical cooperation project. This room is arranged and equipped to serve several functions: videoconferencing room; teaching classroom; individual online research or study. However, as was the case in Beira, the facilities have been little used since they were installed nearly two years ago.

Staff interviewed:

One large-group meeting was held, attended by the Assistant Director (Pedagogic) plus 9 staff members: 7 teachers employed in the area of electrical maintenance; 2 ICT staff, both teachers of computer related courses, but one trained and qualified as an ICT maintenance technician and also trained in the use and maintenance of the videoconferencing and other computer equipment installed in the "distance education laboratory", by means of a three week training course in China. The aim of this meeting was to assess the participants' level of interest in participating in the pilot project, their understanding of its goals and procedures and what it will involve from the participants, any relevant prior experience and therefore the training /development needs of the team. Interest was assessed as generally high.

Understanding of the project and what participants will do was high, with several useful technical or organizational suggestions made by some of the participants – showing that they had a clear grasp of what participation in the project would entail and what preparation should occur at the Institute, both in terms of human resources (project team) development and institutional infrastructure.

Prior experience relevant to the proposed project was self-assessed as follows:

- Little experience of learning materials development (other than conventional lecture notes) except for two out of the seven teachers who had previously worked on ODL projects;
- Only these 2 out of the 7 teachers had any experience of studying via eLearning the same persons who had also developed some ODL materials;
- Only the two above mentioned teachers had some prior experience of developing materials for, or of teaching or tutoring an ODL course. The two experiences were however quite different. One of the teachers had been involved in a project some years before at another institution, based on printed self-study modules and correspondence tutorial support. The other had quite recently discovered that a local private-sector TVET institution had started to offer some eLearning courses via the Moodle platform, so he registered for one of these courses, then requested if he could sit in on training sessions the private institution was organizing for its own teachers on the preparation of courses for the Moodle platform, and then followed this by developing his own small eLearning course on an electricity topic which he is offering to his students as an optional extra activity (all this was self-motivated voluntary effort on his part)

The general meeting was followed by a discussion with one of the ICT staff members – the lady who has ICT technical maintenance skills and who was sent to China for special training on the use and maintenance of the videoconferencing equipment. The main points that emerged were as follows:

- The two conventional computer laboratories is used regularly by many course groups, but there are no significant scheduling issues, given that there two labs for half the number of potential users as compared to the situation in the Beira Institute;
- Therefore, the labs are more readily available for use by individual students for their own online study or research than is the case in Beira;
- The maintenance of the computers was considered good, even though the equipment is getting rather old and subject to breakdowns on the day of the visit, 3 out of 60 student-

use computers were not operational – but there is obviously a high level of end-user training and orientation to ensure that the labs are used appropriately and the equipment used with care and left clean, tidy and protected after use;

- Internet connectivity was assessed as "inadequate part of the time" (2 on a 5-point scale);
- The lack of use of the "distance education laboratory" was judged to be mainly due the lack of an institutional strategy to employ the videoconferencing facilities and indeed, the lack of directives from the ministerial level to promote and guide the Institute. As regards the use of the installed computers, which are much newer than those in the other two labs, for ICT teaching classes, or for individual student research or study, there is little bottom-up pressure on the management as the other two labs are adequate for the current computing needs and end-user demands. Thus the "distance education laboratory" is locked up and not in regular use by any of the programmes. It was hoped that the currently proposed project will turn this situation around.

5.2.3. Industrial Institute, Maputo

Location:

This Institute is located within the city of Maputo, at the end of Rua de Resistência, a road which leads straight into a very large area occupied by the Institute, plus some associated organizations – for example, the Maputo Industrial Institute hosts and offers office space to the consultant staff of the German cooperation agency *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), which describes itself as "the world's leading provider of international cooperation services for sustainable development". GIZ has been working with several Industrial Institutes, but its proximity as a "tenant" has given the Maputo Institute some additional benefits. There are some other such "useful tenants" on the site and still ample room for future expansion.

Principal contact:

The Director, Gabriel Gove, was interviewed and briefed as to the goals of the visit during the Chimoio conference two weeks before the visit. Perhaps because of this passage of time the local plans for the visit were not as complete as in the previously visited Industrial Institutes. Email: <u>gabrielgove@yahoo.com.br</u>. Mobile: 845429867.

Region served:

Maputo is the capital of Mozambique and also the capital of the Province of Maputo, located in the Southern region of Mozambique. It is the largest city in terms of size and commercial/industrial importance, a major seaport and the part of the country where much of the nation's industrial activity is located. Therefore the Maputo Industrial Institute has the largest potential clientele for its education and training services.

Programmes:

The principal programme is Industrial Maintenance, which includes competency areas such as: mechanics; welding, lathe and milling machine work; domestic and industrial electrical installations. Other competency areas covered by other programmes include: industrial and analytical chemistry; electronics; hydraulics; construction of roads, bridges and both domestic and industrial buildings.

Students served:

There are currently just over 1,500 students registered in full time programmes. In addition, the Institute offers some short courses varying from one week to several months duration. Some of these are routinely scheduled and others are given on-demand to staff of local client organizations.

Relevant teaching resources:

As this Institute is selected to develop and implement eLearning in the area of electrical maintenance, only the Industrial Maintenance area was visited, with special emphasis on the workshops and laboratories used for electrical installations and equipment maintenance and repair. There are two workshops equipped for work on the theory of electricity, the design of electric motors and generators, and practical exercises in the installation and testing of electrical circuits, maintenance and repair of motors, generators and (domestic and industrial) electrical equipment. The amount and quality of equipment installed in these workshops is much greater than in the two previously visited Institutes. Also, there are manuals. wall-charts and other informational and instructional materials which are not available in Beira and Nampula. This is in large part due to the presence on the same site of the GIZ German cooperation agency which has invested heavily in these workshops so that they may act as a model for other Institutes (see Photo 10).



Photo 10. Typical electricity laboratory / workshop at the Industrial Institute, Maputo.

ICT laboratories:

The Institute has one "conventional" computing laboratory, with 32 computers installed in rows on benches, plus a master computer and data projection equipment, similar to the laboratories at the previously visited Institutes. There is also another large multipurpose laboratory, with computers arranged along three of the walls and workbenches / tables in the centre part of the large room for small group discussion meetings, self-study, etc. This second lab appears to be designed for student use and indeed on the days of the visit all the computers were in use, often by pairs of students sharing one computer. The computers in both the labs are networked to each other and to the Internet.

The Institute also has one of the 45 "distance education laboratories" that were installed in 2013 by a Chinse technical cooperation project. The room is arranged and equipped to serve several functions: videoconferencing room; teaching classroom; individual online research or study. However, till now, the room has seen little use – it is not used for any regular course teaching and is not available for individual use by students. The videoconference facilities have been used on occasion, but only on some special occasions.

Staff interviewed:

One large-group meeting was to be held on the first day of the visit. However, on that day, it was only possible to locate two or three potential participants on the premises. Therefore, a second visit was scheduled for the afternoon of the following day in the hope of gathering a larger group of participants. However, despite this rescheduling to enable more electricity teachers and ICT staff to be contacted and invited to attend, the meeting was attended by only six staff members: 4 teachers of electrical installation and maintenance; 2 ICT staff, both teachers of computer related courses, but doubling as ICT technicians in order to share the tasks of computer lab maintenance and supervision of the use made of the computers.

The aim of this meeting was to assess the participants' level of interest in participating in the pilot project, their understanding of its goals and procedures and what it will involve from the participants, any relevant prior experience and therefore the training /development needs of the team. Although the number of participants was much smaller than at the two previously visited Institutes, the results of the discussions were quite encouraging:

Interest of the participants and wish to be a part of the project was uniformly very high. Understanding of the project and what participants will do was very good.

However, prior experience relevant to the proposed project was self-assessed as follows:

- Little experience of learning materials development (other than conventional lecture notes);
- None of the participants had any experience of studying via eLearning;
- None of the participating teachers had any prior experience of developing materials for, or of teaching or tutoring any form of ODL course.

The general meeting was not followed by a separate discussion with the ICT staff members, as the number of participants was so low and the ICT staff made up one third of the number (2 out of 6). Also, the staff member of this Institute who had been sent to China for special training related to the use and maintenance of the "distance education laboratory" had recently left the Maputo Institute to take another job, so he was not available for interview. Instead, the general meeting was extended and all present joined in the discussion. The main points that emerged were as follows:

- Both the "conventional" computer laboratory and the "multipurpose ICT workroom" are used regularly for both teaching and self-directed learning / research. Scheduling sessions in the labs was not seen as a problematic issue;
- Both the labs are used for individual student online research and other ICT related projects. The time available for this is restricted due to class-group use scheduled as part of a course, but in general, the current demand for individual use of the computer lab facilities has not exceeded the available supply of computer time;
- The maintenance of the computers was considered adequate, although the equipment is getting rather old on the day of the visit, 5 out of 60 computers were not operational;
- Internet connectivity was assessed as "good most of the time" (4 on a 5-point scale);
- Regarding the lack of use of the "distance education laboratory" the main reason was given as a lack of any project or programme that would require the linking of student groups in this institution to student groups in other localities. Also, the two previously available computer labs are adequate to address the current demand. However, this may change if and when the currently proposed project is implemented.
- The technical staff currently responsible for performing ICT maintenance say they were not formally trained or oriented by the staff member who left, on the specific procedures of using and maintaining the distance education laboratory, but they claim to have mastered how to use and maintain the equipment and guarantee that the lab is fully functional.

5.2.4. Commercial Institute, Maputo.

Location:

This Institute is located within the city of Maputo, on 24th July Street, in one of the city's busiest business districts and very close to over a half dozen of the more well-established three, four and five star hotels and many of the most popular restaurants in town. It is thus strategically located in order to serve client organizations seeking trained personnel, or trainees as interns, in both the general business administration and the hotel and tourism sectors of the economy.

Principal contact:

The Director, Gina Mangane, proposed the detailed schedule of the visit during the Chimoio conference two weeks earlier. Email: <u>gmangane@gmail.com</u>. Mobile: 8212337907. She planned the one day visit meticulously and participated in many of the meetings and discussions.

Region served:

Maputo is the capital of Mozambique and also the capital of the Province of Maputo, located in the Southern region of Mozambique. It is the largest city in terms of size and commercial/industrial importance, a major seaport and the nation's commercial hub. It is also a city that attracts tourists and a centre of cultural, artistic, social and educational events. Therefore the Maputo Commercial Institute has a large potential clientele for its education and training services in both the general business and the hospitality sectors.

Programmes:

The business-world-related programmes include such areas as accounting, financial management and the import, export and customs subsectors, as well as the more general secretarial and business administration subjects. The hotel and tourism programmes prepare participants for jobs in the hospitality sector, with emphasis on the restaurants and bars subsector.

Students served:

There are currently about 750 students registered in full time programmes. In addition, the Institute offers occasional short courses varying from one week to several months duration. Some of these are routinely scheduled and others are given on-demand to staff of local client organizations.

Relevant teaching resources:

As this Institute is selected to develop and implement eLearning in the area of restaurant and bar competencies, only this area was visited. The Institute runs a "training restaurant" which operates on a commercial basis, serving the lunchtime clientele from the many local businesses. Given the presence of many other restaurants in the immediate vicinity, the training restaurant must compete in terms of quality and value of the services offered and the food served. The restaurant, which was inaugurated in 2013, received technical and financial support from the Italian Cooperation, through the PRETEP programme (see Appendix 5), to install, upgrade and equip the kitchen and restaurant facilities and also to train, in Italy, five of the Institute's teaching staff in the skills of restaurant and kitchen management.

ICT laboratories:

The Institute has one "conventional" computing laboratory, with 28 computers installed in rows on benches, plus a master computer and data projection equipment, similar to the laboratories at the previously visited Industrial Institutes. On the day of the visit, all the computers were operational. This laboratory gets to be used more by the accounting and general business administration area

than the hospitality area. However, the technical support person said there was a reasonable amount of unused capacity to allow the hospitality area to increase its use of the facility. Unlike the three Industrial Institutes, the Maputo Commercial Institute does not have a "distance education laboratory" equipped for videoconferencing, group teaching and individual online research or study.

Staff interviewed:

The group meeting was attended by the Director, Gina Mangane and seven of her staff members: six teachers from the hospitality area, plus one ICT support person. The aim of this meeting was to assess the participants' level of interest in the pilot project, their understanding of its goals and procedures, any relevant prior experience and therefore the training /development needs of the team. The outcomes of the discussion were assessed as follows:

Interest of the participants and wish to be a part of the project was uniformly very high. Understanding of the project and what participants will do was adequate. However, there was some doubt expressed, by the Director and also some of the staff, regarding the adequacy of the ICT infrastructure and the quality of current Internet access.

Prior experience relevant to the proposed project was self-assessed as follows:

- Little experience of learning materials development (other than conventional lecture notes);
- None of the participants had any experience of studying via eLearning;
- None of the participating teachers had any prior experience of developing materials for, or of teaching or tutoring any form of ODL course.

The general meeting was not followed by a separate discussion with the ICT support staff member. Instead, the general meeting also addressed the ICT-related issues raised by the Director and all present joined in the discussion. The main points that emerged were as follows:

- The one "conventional" computer laboratory is used for both conventional group teaching of computer end-user skills (Excel, Word, Access, etc.) and self-directed learning / research. Scheduling sessions in the labs was not seen as a major issue as there were ample unused time slots available.
- The maintenance of the computers was considered adequate, although the equipment is getting rather old on the day of the visit, all the computers were operational;
- Internet connectivity was assessed as "slow and sometimes unreliable" (2 on a 5-point scale);
- The lack of a "distance education laboratory" as installed in the three Industrial Institutes who will be participating in the pilot project was initially seen as a weak point. But a discussion of one of the goals of the project to extend the impact of the Institute by allowing the unqualified staff in restaurants across the country to access skills training courses from their place of work led to the realization that the internal ICT infrastructure of the Institute was not as critical a factor as the participants had originally thought. However, there were still some doubts regarding the adequacy of the necessary external ICT infrastructure that would enable the distance student to access the course materials and interact with tutors and peers.

5.2.5. Professional School, Massinga

Location:

The School is located at the side of National Highway #1, about two kilometres to the North of the town of Massinga, in a semi-rural setting. Its position "as the crow flies" (i.e. not taking account of roads that curve to avoid obstacles) is about 60 kilometres North of the Provincial capital Inhambane and almost exactly midway between Beira and Maputo.

Principal contact:

The Director, Paulo Munguambe, discussed the detailed schedule of the visit during the Chimoio conference two weeks earlier, planned the one day visit meticulously and participated in many of the meetings and discussions. Email: <u>munguambepaulo@gmail.com</u>. Mobile: 828848980.

Region served:

Massinga is a relatively small town, in a particularly beautiful coastal setting, popular with tourists. The region is partly agricultural and partly forests which are exploited for the hardwoods of excellent quality. The school is strategically located in order to serve students seeking employment in the local agricultural, manufacturing and hotel and tourism business enterprises.

Programmes:

The principal programmes are: carpentry and furniture making; welding and construction industry metalwork; agricultural management; restaurant and bar. The last area, which is selected for the proposed pilot eLearning project, has since 2009 offered a competency-based programme of courses at the Basic level, for employees in the restaurant and bar subsector.

Students served:

Because of its setting away from major towns and its purpose to serve the region as a whole, a proportion of the current students live on-campus during their course of study. The capacity for boarding students is 100 male and 75 female. In contrast to the other four Institutes selected for the pilot project, who offer skills training programmes at the so-called Medium level of pre-tertiary TVET, the Massinga Professional School's programmes are at the Basic level. As they are currently offered on-campus to a student population principally composed of first-time job-seekers, the average age of the students at the Massinga School is lower than in the other four Institutes. However, given the goal of the pilot project to extend access to TVET to unqualified staff already employed in the hospitality sector, it is probable that the average age of the ODL students will be higher than the current on-campus students.

Relevant teaching resources:

In addition to its eleven classrooms and other ancillary teaching facilities such as Chemistry, Biology and Physics laboratories,, the School has three workshops: carpentry and furniture making metalworking and a skills-training restaurant rather similar to the one at the Maputo Commercial Institute. Therefore the two institutions that will develop and teach the restaurant and bar online courses have similar on-campus teaching resources.

ICT laboratories:

The Massinga Professional School has one "conventional" computing laboratory, with 24 computers installed in rows on benches, plus a master computer and data projection equipment, similar to the laboratories at the previously visited Industrial Institutes. On the day of the visit, all the computers were operational. However, access to the Internet was unreliable.

Unlike the three Industrial Institutes, the Massinga Professional School does not have a "distance education laboratory" equipped for videoconferencing, group teaching and individual online research or study.

Staff interviewed:

The group meeting was attended by the Director, Paulo Munguambe, and five of his staff members: four teachers from the restaurant/bar area, plus one ICT support person. The aim of this meeting was to assess the participants' level of interest in the pilot project, their understanding of its goals and procedures, any relevant prior experience and therefore the training /development needs of the team. The outcomes of the discussion were assessed as follows:

Interest of the participants and wish to be a part of the project was uniformly very high. Understanding of the project and what participants will do was good. However, there was some doubt regarding the adequacy of the ICT infrastructure and the quality of current Internet access. Prior experience relevant to the proposed project was self-assessed as follows:

- Little experience of learning materials development (other than conventional lecture notes);
- None of the participants had any experience of studying via eLearning;
- None of the participating teachers had any prior experience of developing materials for, or of teaching or tutoring any form of ODL course.

The general meeting was not followed by a separate discussion with the ICT support staff member. Instead, the general meeting also addressed the ICT-related issues raised by the Director and all present joined in the discussion. The main points that emerged were as follows:

- The one "conventional" computer laboratory is used for both conventional group teaching of computer end-user skills (Excel, Word, Access, etc.) and self-directed learning / research.
- The maintenance of the computers was considered adequate on the day of the visit, all the computers were operational;
- Internet connectivity was assessed as "slow and sometimes unreliable" (2 on a 5-point scale);
- The lack of a "distance education laboratory" as installed in the three Industrial Institutes who will be participating in the pilot project was not raised in the discussion. However, there was much discussion regarding the adequacy of the external ICT infrastructure that is currently available in a semi-rural setting such as the Massinga Professional School.



Photo 11. Part of a training kitchen at the Massinga Professional School



Photo 12. Library and self-study room at the Massinga Professional School

6. Proposed model and plan for eLearning integration in the Mozambique TVET system

In the light of information collected during the mission it seems there are several potential partners already identified in the original DINET proposal, plus some further potential partners not mentioned in the proposal, but introduced into the scenario as the baseline study progressed.

The original potential partners, all with roles to play are the five TVET institutes identified in the DINET proposal, plus INED, IEDA and ISDB. The Commonwealth of Learning (COL), by the fact of being the recipient of the current DINET proposal, is also a declared potential partner.

The additional potential partners, already involved with DINET on some aspects of the project, but not directly mentioned in the DINET proposal, include:

- The Portuguese consulting company TRIÓNICA, with offices in Maputo, which has supplied an eLearning platform (LearnMate) to the Ministry of Education, with a contract that defines its use by a given number of educational institutions, has already given one training course to potential end-users and is offering further (no-cost) training to further batches of users.
- The team of Italian freelance consultants who have been assisting DINET to formulate its strategies for the use of eLearning in the TVET sector and at least partially involved in the planning of the pilot project that is the object of the current DINET proposal to COL.

In the closing meeting with the DINET team, a draft plan of action for the implementation of the project was presented by the consultant. During the ensuing discussions, this plan was changed in a few details in order to accommodate suggestions from the participants. Antonio Archetti, one of the Italian freelance consultants, participated in this meeting and contributed many useful suggestions, which were taken into consideration.

The DINET Director was not present during the discussions, but arrived close to the end of the meeting when the consultant presented a summary of the deliberations. The Director concurred in principle with the suggested draft plan and confirmed that the company TRIÓNICA has made a proposal to offer further no-cost training to users of the LearnMate platform in late August or early September 2015. Further analysis of the various alternatives for the programme of work, by the consultant in the light of feedback from the DINET Director and by Alison Mead Richardson on behalf of COL, identified some missing steps in the initial planning stages:

- identification of elearning course design and development teams in the five Institutes, ideally comprising one manager and 3-5 teachers in each team. COL refers to these as elearning Champion Teams;
- Identification of the specific courses to be designed, developed and delivered as eLearning.

These activities must necessarily be undertaken and concluded before the beginning of the project as such – i.e. before the teams start their initial training. In addition, COL has suggested that some of the initial training of the members of the five course design teams to should be performed by means of existing online courses which are available via COL and which are delivered via Moodle. Thus, the design teams will have extensive supervised training, at-a-distance, with tutorial support from COL.

At the same time (i.e. in parallel) the teams will be developing their own courses and will install them on the LearnMate platform on the server at IEDA, relying on the support services of IEDA in this process. These additional components have been added to the proposed schedule of project activities. The proposed schedule (which suggests two alternative dates, still to be decided, for the LearnMate technical skills workshop by TRIÖNICA), is presented in Table 3.

Approximate dates		Principal activities or events	Locale & Personnel
May – June 2015		Baseline study for Distance Technical and	Mozambique;
		Professional Education in Mozambique	Alex Romiszowski (ajr)
July 2015		Review of report; COL proposal; DINET reply	Home base / online;
			COL / DINET / ajr
August 2015	, Week 1	Plan project start-up activities (+ notification	Maputo: DINET/ajr/IEDA;
		of project partners of their roles & duties)	other partners tel/online
	Week 2	Identification of eLearning champion teams in	Home base / online;
		5 institutes	5 Institutes / DINET
	Week 3	Identification of courses to be developed as	Home base / online;
		eLearning	5 Institutes / DINET
	Week 4	Joint planning of the initial workshop details	Maputo (DINET);
		(for the first weeks of September)	DINET / ajr / TRIONICA
Sept. 2015	Week 1	Technical skills workshop Alternative A	Maputo (IEDA); DINET,
		(Use of Moodle/LearnMate)	TRIONICA, 5 teams (+ajr)
	Week 2	COL partnership planning meeting, FaB	Maputo (IEDA): DINET;
		model, targets, timelines, COL QA Framework	
		& M&E protocols (2 days)	Teams; COL (ajr & amr);
		Instructional Design workshop (3 days)	
	Mook 2	lechnical skills workshop - Alternative B	Maputo (IEDA); DINE I
	Week 5		TRIONICA, 5 tearris (+ajr)
	Wook 1	Research people from institutions/DINET	Home base / online;
	(start)	participate in training on tracer studies	Teams working at their
	(Start)		Institutes, with regular
			communication via
			Moodle
Oct – Nov 20)15	5 Institute course teams design and develop	Home base / online
	,15	course modules in LearnMate	Institutional Champion
		Elexible Skills Development online course	Teams
			Feedback provided by
			online communication
Dec 2015	Week 1	Workshop C (formative evaluation: set up and	Maputo (IEDA) or
		start an "alpha-test" on a sample group)	videoconference:
		Possibly via video conference	DINET,
		,	COL (ajr), TRIÓNICA
	Week 2	Analysis of alpha-test results on an ongoing	Online (via IEDA);
	(start)	basis, module-by-module and feedback to the	COL (ajr) / TRIÓNICA
		5 course teams, supplied via LearnMate	
Jan – Feb 2016		Remote support for alpha test results; Alpha-	Home base;
		test and course revision continues in	Institutional Champion
		preparation for launch	Teams, ajr
March 2016	(if/when	Launch of courses in new academic year	Online;
courses are	ready)		Institutional Champion
			Teams
All of 2016		Monitoring and Evaluation (including criteria	Online;
		for sustainable development and gender)	All project partners

 Table 3. A first-draft implementation plan for the DINET pilot eLearning project

These timelines can be discussed in the Partners planning workshop and adjusted according to additional details which emerge.

7. Analysis of Mozambique's potential contribution to achievement of COL's planned outcomes

7.1. TVSD indicators & targets

The Terms of Reference (ToR) received for this assignment emphasize that the baseline study should seek to assess the extent to which the pilot project proposed by DINET is in alignment with the goals, policies and strategies promoted by COL. Four TVSD outcome indicators and their associated targets are presented which are global targets that COL seeks to achieve through a portfolio of projects in various countries and contexts.

Mozambique is seen as an in-depth country for the TVSD initiative in which COL seeks to test the flexible and blended TVET model. According to the current DINET proposal, the project's actual and potential impact (if the pilot is successful and goes to scale) is discussed here in relation to the COL targets.

12 new national ODFL strategy and/or policy statements are produced which include implementation and resourcing plans.

In its project proposal submitted to COL (see **Appendix 2**), DINET defines the expected outcomes of the project as follows:

- Technical training assured for youth at school age out of school and prepare them to have a profession;
- Basic qualities for personality developed, educating them to take a correct attitude towards work;
- Analytical and synthesis, research and innovation skills developed, organizational and scientific work awareness in youth;
- Distance learning developed with the aim to reduce geographical and gender disparities;
- Distance learning developed aiming to increase opportunities of access to Technical and Vocational Training for youth and adults of all social classes;
- The taste of attending Technical and Vocational Training instilled in youth of both genders;
- Youth of both genders encouraged and stimulated for entrepreneurship and selfemployment throughout the training.

Whereas the project proposal is not in itself a formal and official statement of national policy, the above list of goals certainly reflects a policy that is in close alignment to that promoted by COL. Furthermore, the goals are then accompanied by a specific project implementation proposal. What is missing from the proposal is a resourcing plan, but this is to be expected – after all, the proposal is a means of searching for and securing the necessary resources.

Therefore, the proposed pilot project, if successfully implemented, will be the first step towards the larger scale implementation in Mozambique of an ODFL policy and associated strategies in alignment with the first indicator. Mozambique would become one of the 12 innovative nations.

85 organisations adopt or strengthen the FaB TVSD model and introduce curricula relevant to sustainable livelihoods

This target statement really has two parts: quantitative and qualitative. The qualitative aspect, related to sustainable livelihoods will be addressed below, as it is also a part of the fourth target statement. Regarding the quantitative aspect, the DINET pilot project proposes to involve 5 Institutes in design, development and implementation of eLearning as a means of extending access to TVET opportunities to students who are not formally registered and/or regularly attending classes on campus.

The selected areas of curriculum are (a) electrical installation and maintenance and (b) management and operation of restaurants, bars and similar establishments. The pilot project will not attempt to cover the whole of these curricula through elearning. On the contrary, the project must plan and implement a blended-learning strategy, in part because it is a small-scale pilot project, but mainly due to the nature of the selected curriculum areas which require significant practical hands-on experience in order to master the competencies. Furthermore, the off-campus students must be flexible in the manner in which they pursue their studies. Some may attend their nearest TVET Institute at evenings, weekends, or in vacation time to use the laboratories and workshops when they have the time to do so. Others, who are already employed (including self-employed) may be able to arrange to perform the required practical tasks at their place of work, with a flexible plan of learner supervision and support supplied at a distance. Therefore, the implementation plan should be both flexible and blended, and the implementation partners (including COL) must work to ensure that it is so. The pilot project will contribute 5 institutions which are starting the FaB model, but this is just the beginning. If the pilot project leads to a large scale roll-out, then the potential in Mozambique is about 100 public-sector TVET institutions.

2,500 teachers are integrating technology (including OER) into TVSD practice

It has been suggested that an optimal size and structure of the course design, development and implementation teams in each of the participating Institutes is five (four subject-expert teachers plus one manager / teacher). This alone gives an initial number of 25 teachers who will be trained by the project partners to integrate a variety of educational technologies and to select and use OER as part of their courses. But these teachers will involve others in their institutions to take on a part of the course teaching and tutoring tasks, so a much larger number of teachers will learn about, and learn how to use, the innovations. If the pilot project is implemented successfully and then moves to scale, the potential once more exceeds the stated global target. However, in that case, the original five Institutes should be a source of expertise and training for the staff of other Institutes, on a "cascade" model. The project partners should ensure that course design team members are well prepared to motivate, involve and train their colleagues at their Institutes, and later multiply the effect by involving other Institutes. COL consultants are especially experienced in imparting such skills and promoting such a cascade effect.

45,000 learners complete courses using new learning resources relevant to sustainable livelihoods

There are two parts to this target statement. One is the quantitative aspect of numbers of learners completing courses. The other is the more qualitative aspect of whether the course experience in some way promotes sustainable livelihoods. The first is clear. The five participating Institutes should be able to train about 300 to 450 students, or on average between 60 and 90 students per Institute, over a period of about one year. This would represent about three classes of between 20 and 30 students taking each of the five pilot courses. In the first semester of the pilot year, the numbers of participating students may be limited to just one class in order to effectively track and measure all relevant factors of the pilot. But if the course is successful or is revised in the light evaluation data, it may be repeated in the second semester with two (or maybe even more) running in parallel.

The second part of this target statement requires some analysis of the sustainable livelihoods concept. The literature abounds with definitions, procedures, check lists and frameworks which present similar but often subtly different interpretations.



Perhaps the most useful idea in the present context is the linking of peoples' ability to improve their status or situation to the "assets" or "capital" at their disposal. Five categories of capital are proposed: financial, human, natural, physical and social. The lack of any one, or combination, of these may impede personal success and realization. The task of planners wishing to promote the growth and success of a person, a group, or a nation is to ensure that all have adequate and appropriate access to all relevant categories of capital.

The most common, but most restricted, concept of capital is money – **financial capital**. The DINET project proposal, as it stands, makes no mention of the cost to the student of the proposed eLearning courses. However, quite clearly this cost must be affordable or the project will fail. The detailed planning and implementation of the project should ensure that the elearning versions of the proposed courses are at least as affordable as the current campus-based versions, and perhaps even more so. This aspect of the project calls for careful, realistic and **systemic project planning**.

One form of **human capital** is the knowledge and skills gained through learning. The DINET project obviously seeks to increase this form of capital, and it will succeed to the extent that the learning objectives are relevant in terms of leading to work opportunities and the associated learning activities are effective, efficient and indeed relevant to the objectives. This is ensured through systematic **instructional design**, based on sound learning principles and research.

One form of **natural capital** is access to relevant resources. The DINET project proposes to address lack of access to TVET opportunities and related learning resources by means of eLearning and a blended-learning approach that combines addressing the issue of access with addressing the needs of practical hands-on learning of employable skills. This is one role of **curriculum and course design** which will have to ensure that concepts of environmental sustainability are included in the learning content where appropriate.

One form of **physical capital**, particularly important in the present context, is the availability and the quality of the communications infrastructure required to render the delivery of the eLearning courses effective and efficient. During the detailed planning and implementation stages of the DINET project, this aspect must be taken into consideration in the choice of media, delivery platforms, devices used by students and so on. This is the role of those project partners who possess **ICT and**

communications infrastructure design expertise. If possible, a comparison with traditional programme delivery models may be made.

Finally, one form of **social capital** relevant in this context is the extent to which certain individuals or groups are admitted to or excluded from fully participating in TVET opportunities or benefiting from the learning outcomes achieved by securing relevant employment. The detailed planning and the implementation stages of the DINET project should ensure that gender mainstreaming is both planned and practiced in the stages of selection and admission of students, teaching, tutoring and other student support activities, and in the evaluation processes and procedures. Other marginalised groups to be included are those learners living in rural areas who may not currently have access to training. In addition to the use of gender mainstreaming principles in the detailed planning of the project, it is equally or more important that the plans are implemented as intended. This is another important role of **project management**.

In order to be able to measure if the project contributes to improved livelihoods of learners completing these courses, it will be necessary to track not only learner enrolment and completion but also to carry out longitudinal tracer studies of a sample of completing learners to track their progress.

7.2. Capacity building needs and COL's contribution

On the basis of the preceding paragraphs, and indeed other sections of this baseline study (e.g. the institutional profiles presented in Section 5) it follows that several categories of capacity building needs should be addressed to ensure the proposed project's success and sustainability. These are:

- Systemic project design competencies that consider and integrate the human, natural, physical, financial and social factors that may impact the project's effectiveness, efficiency, viability, alignment to national and international norms and standards, and so on;
- Curriculum and course design competencies that consider the existing realities of access, practice opportunities, existing infrastructure, skills of available teachers and so on, in addition to the course content;
- Instructional design competencies that may ensure that learning objectives are relevant to tasks actually performed in real-life job situations, that the learning activities, exercises and evaluation methods are in alignment with the objectives, that appropriate learning and teaching methods are employed and optimal presentation and delivery media are selected;
- Technical competencies in the use of the techniques and technologies, both hardware and software, that are to be employed for the design, development, implementation, delivery, management and evaluation of the proposed new courses;
- Monitoring and evaluation competencies, systems and protocols need to be aligned to existing Ministry requirements. It is likely that training in tracer studies will be needed.
- Educational project management competencies required to ensure that all the planning decisions are correctly and completely implemented to appropriate standards of quality, quantity and time, that course delivery and student support activities occur as per plan, that appropriate monitoring and evaluation procedures are followed, and that the results are used for formative improvements during the project as well as summative reporting.

COL is well able to contribute to addressing all five of these identified capacity building needs. Naturally, however, COL would count on the collaboration of the local project partners.

The overall planning of the project is of course the responsibility of DINET and its local consultants, but some advice and help from COL consultants on the basis of experience of similar projects and use of a systems approach to predict and avoid typical implementation problems may ensure that

the project progresses in an effective and cost-effective manner. In particular, DINET and its local partners may benefit from COL's experience of implementing in practice the principles of the competency-based training (CBT) and flexible skills development (FSD) philosophies. These philosophies are accepted and espoused by Mozambique's TVET planning and regulating body, COREP (soon to be replaced/absorbed by ANEP) as seen by the decision and subsequent actions to develop a national vocational qualifications (NVQ) framework. However, it is one thing to develop such a set of competency standards and another to break out of the shackles of "classic" school traditions based on counting the classroom hours rather than measuring the skills mastered.

The curriculum and overall course design stages must of course involve DINET, local partners and ministry representatives (e.g. INED; IEDA; ISDB; ANEP when it replaces PIREP, etc.) and of course the five TVET Institutes. But once again, the experience that COL has acquired in its work on so many similar projects in similar contexts may help to integrate the efforts of these local partners. In particular, COL may furnish practical examples of curriculum and course designs that have proved to be effective in transforming rigid, content-based, courses into flexible, competence-based, skills training programmes, and also show how open and flexible distance learning may be used as an effective enabling methodology.

The instructional design component is one where COL should play a leading role. The local partners INED and IEDA and ISDB have some experience in this area with more traditional print-based ODL course design, but have little practical experience of instructional design for eLearning. The company TRIÓNICA that has supplied the LearnMate platform is offering to give free end-user training. There is mention in its training proposal that instructional design training is included. However, this appears to be more related to such aspects as visual message design and use of animation software. Through its involvement in this project, COL will be in a position to demonstrate and promote an instructional design approach based on learning theories and experimental research.

In the area of technical competencies related to the LearnMate platform, TRIÓNICA may indeed be a leading project partner. However, the broad experience of COL in many projects that have used, and typically have "personalized" Moodle to institutional and project requirements, may be of value, given that LearnMate is itself a personalized version of the Moodle platform. Furthermore, by offering the project team members the opportunity to study the principles and practice of OFDL and FaB by means of OFDL online courses (delivered via Moodle), COL will extend the team members' professional development through a series of tailored capacity building interventions.

COL plans to introduce an online data collection platform to track learner enrolments and completions in specified courses. In addition, each partner institution will be requested to complete an online readiness survey and build up an institutional eportfolio of capability against the TVSD Quality Assurance framework. Teachers who are training in eLearning will have individual eportfolios on the TVSD Moodle platform on which they will provide evidence of their competencies in flexible and blended learning. Upon successful completion of the portfolios, COL will recognise both as FaB Institutions or FaB teachers.

Finally, in the area of educational project management, DINET and its local project partners will need much advice and practical assistance based on COL's acquired experience in ODL projects that:

- plan to design and then develop (or select from OER) the required learning materials;
- then install all the components in a pedagogically appropriate online course structure;
- also prepare, train and support the online tutors;
- ensure access to and delivery of the course modules to the students;
- monitor and evaluate the learning processes and procedures;
- and do all this to strict predetermined standards of quality, cost and time schedule.

In summary, through its involvement in this project, COL will guide DINET, its local partners and the participating Industrial and Commercial Institutes along a path of systematic and systemic design, development, implementation, evaluation and management of ODFL projects in the TVET sector. Furthermore, in addition to helping to ensure that the pilot project in the five partner Institutes is effective, efficient and sustainable and therefore goes to scale, ultimately involving up to 100 TVET institutions, COL's involvement may also help DINET, in collaboration with INED, to formulate general policies and strategies for the use of ODFL in other future projects in the TVET sector.

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APPENDIX 1 Terms of Reference

Baseline Study for Distance Technical and Professional Education in Mozambique

1. Introduction & background

The Director of the National Directorate for Technical and Professional Education (DINET) has presented a proposal to COL to request a partnership to pilot the use of eLearning to expand access to TVET in Mozambique. The proposal is given as Annex 1 to this ToR and covers the background to the project.

The priorities for DINET are to:

☑ increase access and retention in TVET – particularly in relation to geographical and gender disparities

I ensure good quality, relevant training to meet the requirements of the labour market (formal and informal)

I improve management and coordination in the TVET system whilst involving industry

2. Relevance to COL Programme Plan

The new COL programme plan aims to contribute to strengthened sustainable development through learning. There are three corporate **long term outcomes** (4-6 years):

- Strengthened sustainable livelihoods
- Increased and equitable access to, and use of, quality learning opportunities
- Improved organisational capacity to leverage open and distance learning

There are five corporate intermediate outcomes (2-4 years):

- More curricula and learning resources in place which are relevant to sustainable development and gender-responsive
- Enhanced ODL capacity support through communities of practice and purpose
- More institutions and organisations take up and implement tested ODL models for scaling up
- More institutions and organisations implement or significantly improve ODL systems and practices for quality learning opportunities
- More governments and organisations adopt ODL policies and create strategies for quality learning opportunities

The Technical & Vocational Skills Development Initiative is one of 7 programme areas and has the following outcome statement and indicators:

TVSD outcome statement

More governments and organisations implement the Flexible and Blended (FaB) model of TVSD for increasing equitable access to skills training for sustainable livelihoods.

TVSD indicators & targets

1. 12 new national ODFL strategy and/or policy statements are produced which include implementation and resourcing plans

2. 85 organisations adopt or strengthen the FaB TVSD model and introduce curricula relevant to sustainable livelihoods

3. 2,500 teachers are integrating technology (including OER) into TVSD practice

4. 45,000 learners complete courses using new learning resources relevant to sustainable livelihoods

This project will contribute to all four TVSD outcome indicators – as long as concepts of sustainable development can be included in the courses to be developed as eLearning. The TVSD definition of sustainable development includes a focus on gender mainstreaming because if half the population has limited access to relevant learning opportunities, a community's social and economic development will be limited. Therefore the priorities of DINET and the planned outcomes for COL are aligned.

3. Objectives of this Study

The objectives of this input are to prepare a baseline study of the TVET sector in Mozambique in relation to the use of eLearning and the status of sustainable development in programme offerings. The study will provide the information upon which the monitoring and evaluation protocols are built for the project. A feasibility study will be carried out in relation to the proposed five institutions which will pilot eLearning in flexible and blended approaches in order to design the project plan and identify any potential barriers to success. The plan for use of eLearning in the TVET sector should be framed in alignment with overall Ministry of Education & Human Development (MEHD) and Ministry of Science and Technology, Higher Education and Technical Education (MSTHETE) national policies and strategies regarding the use of distance education.

4. Scope of Work

The consultant will produce a baseline report on elearning in TVET in Mozambique, to include:

a. carry out a desk study of available development partner and government reports to develop a situational analysis of TVET in relation to elearning and sustainable development b. visit Mozambique to visit the 5 proposed pilot centres and produce a feasibility study of their capacity to pilot elearning

c. consult and engage with TVET stakeholders to understand the situational context and obtain guidance on the needs and challenges

d. produce a plan for the integration of elearning into technical and professional education in government TVET institutions

e. include a capacity building and support plan for how COL should engage with DINET to bring about the outcomes including baseline information against which to monitor and evaluate the achievements of the project.

DINET will facilitate the baseline study to include:

a. provide background information on the TVET system in Mozambique and previous activities relevant to elearning

b. set up stakeholder meetings for the consultant at the beginning and end of the visit

- c. make arrangements with the 5 proposed pilot centres for the consultant to visit
- d. provide a contact officer to facilitate information gathering and support during the visit

COL will manage the development of the baseline study to include:

- a. contract the consultant to fulfil these ToRs
- b. pay all consultant fees, travel and accommodation costs in Mozambique
- c. review all draft reports and provide professional input
- d. finalise the report and share it with DINET

5. Dates and location

The consultant will be in Mozambique from 25th May to 18th June 2015. The proposed dates of activities in Mozambique:

25/26 May Stakeholder meeting and meetings with DINET 28/29 May Visits to Maputo institutions 1/2 June Visit to Massinga institution 7 June Fly to Beira 8/9 June Visit Beira Institution 10 June Fly to Nampula 11/12 June Visit Nampula Institutions 13 June Fly to Maputo 16/17 June Maputo stakeholder meetings 18 June Wrap up meeting with DINET

Project research and write up will be done on the intervening days.

6. Deliverables

The consultant will produce a baseline report under the following headings:

- 1. Situational analysis of technical and professional education
- 2. Gender analysis
- 3. eLearning context in technical and professional education
- 4. Stakeholder analysis
- 5. Readiness of proposed eLearning pilot institutions
- 6. System readiness (DINET)

7. Proposed model and plan for eLearning integration in Mozambique TVET system including broad monitoring and evaluation plan

8. Analysis of capacity building needs and COL's contribution.

A more detailed list of baseline statistics required and available will be discussed and agreed between the project partners.

7. Proposed consultant biography

Alex Romiszowski started his career as a technical training officer in the UK automobile industry. This work involved some contributions to the UK training standards and qualifications, through the Industrial Training Boards and by the definition of national vocational qualifications (NVQs). At Middlesex Polytechnic (now Middlesex University) he was responsible for the design of new technical courses and curricula, development of NVQs and responsibility for the design, implementation and administration of the City and Guilds technical and technical teacher training courses offered by the Polytechnic.

He has worked for a range of development agencies including the International Labour Office (ILO) as training systems designer / developer in a UNDP project in Brazil, charged with the development and implementation of technical and commercial training via a network of technical training institutes.

APPENDIX 2 – The Pilot Project Proposal from DINET

REPUBLIC OF MOZAMBIQUE MINISTRY OF SCIENCE AND TECNOLOGY, HIGHER EDUCATION AND TECHNICAL AND PROFESSIONAL TRAINING NATIONAL DIRECTORATE FOR TECHNICAL AND PROFESSIONAL EDUCATION

Project Name:

Introduction to Distance Technical and Professional Education National Directorate for Technical and Professional Education - DINET

Institutions involved

Department for Information Technologies and Communication - DTIC Institute for Distance and Open Education - IDEA National Institute for Distance Education -INED

> Responsible Team Arao Loureiro Junior Matsimbe Joao Trabuk Virgilio Machaculo Jossefa Zibia Maputo, February 2015

Introduction to Technical and Professional Distance Learning (DL-ETP)

Introduction

Technical and Professional Education in Mozambique comprises three levels namely Elementary, Basic and Medium. The length of the courses varies from three to four years according to the field of training and the level. The curriculum organization of technical courses covers four areas, which are general education training, basic general, basic specific, and that of the specialty. Technical Education training has a terminal purpose. That is, the student who finishes the course successfully is ready to enter the labour market. However, because the old curriculum also aimed to provide necessary knowledge to carry on with the studies in subsequent levels, its curricular organization comprises general and basic training component. And this, eventually, reduces the possibilities for better professionalism of students during the training period. The rapid growth in demand for Technical and Professional training at all levels of the National Education System in Mozambique is now an economic, social and cultural challenge with a strong historical significance. This is particularly notable in recent years, due to demand of qualifications and competencies of international standard in industry, agriculture and services.

This challenge is more complex when we take into account the weak training offer and the great demand of the labour market driven by recent discoveries of minerals and hydrocarbons in the country.

Proponent

The National Directorate for Technical and Vocational Education, hereinafter referred to as DINET, is a central agency of the Ministry of Education which is responsible for directing and controlling the implementation of educational policy in regular Technical and Professional Education at Elementary, Basic and Medium levels.

Its strategic plan sets the increasing of Access and Retention TVET as priorities, with particular attention to Geographical and Gender disparities; ensuring Relevant training and Quality to meet the requirements of the labour market (formal and informal); and Improved Management and Coordination in the system involving the productive sector actively.

The organizational structure of the leading team at the National Directorate for technical education consists of a National Director, Two chiefs of departments namely School Management and Administration and Technical Pedagogic department. Divisions of laws and regulations, school Organization and Management, Methodologies, and the Secretariat. In order to develop these activities with success, DINET has a collaboration of the following organizations: PRETEP, UTA, GIZ, PIREP and ISDB. To carry out this project, DINET has the support of the Department of Information and Communication Technologies- DTIC, The Institute of Distance and Open Education- IDEA, The National Institute of Distance Education-INED, and other providers of technical and vocational training.

Context

Technical Education has the responsibility of training workers and technicians providing them with the skills required to meet labour market requirements for the different economic and social sectors of the country. Thus, technical and professional courses are planned to reflect the needs of the development of national economy and they have a terminal character. Therefore, they must prioritize quality and relevance in training. Furthermore, the behaviour of market demand for labour in different sectors is an important factor to consider in the choice of the courses to launch in different levels of education. A quick glance of the school network development in technical education up to the year 2000 shows a significant expansion of the elementary level, which was mean to be opening at least one school in each province until then.

In 2001, the institutional network of technical education could be summed up in the following: Network of public training institutions under the Ministry of Education (39 institutions) - this absorbed just over 1% of the school-aged population (31,000 staff in 2001). This year, 4,769 candidates completed the secondary courses of public general training (under the Ministry of Education) and 1,464 were admitted, which accounts for only 30.7% of candidates; With the introduction of the competency-based standards in Hotels and Tourism, Agro-livestock and Commercial courses, a reduction in the number of vacancies of candidates to be admitted to TVET institutions registered due to the new requirement imposed; The Network of Technical and Professional Education training institutions under the responsibility of other ministries and / or public and private companies (33 institutions absorbing around 5000 staff in 2001, an insignificant portion (of about 0.19%) of the population in school age; 2 The Medium level courses were limited to six provinces in the country; 2 Rural areas did not have elementary Schools of Arts and Crafts and agriculture; 2 The girls' participation in the Technical Education Vocational almost insignificant (about 20%).

Currently, Technical and Professional Education is in transition from a process of classic and more theoretical training curriculum to a more practical training model, based on Competency Standards and that is distinguished by putting more value on skills competences and know-how.

Current institutional network now has about 100 institutions of Professional Education Basic and Medium levels under the supervision of the National Directorate for Technical and Professional Education, 12 vocational training centres under the Ministry of Labour and 135 Vocational Training Centres registered under the responsibility of other ministries.

All these infrastructures, added to private institutions are insufficient to cover the approximately 50,000 graduates of the 10th class of the General Secondary Education and 3rd year of Basic Technical and Professional levels seeking to continue their training in the Institutes of Medium Technical and Professional Education. Moreover, these days, there has been a large increase in skilled labour demand to meet the needs of the operators in the recent mineral discoveries of coal, gas and oil, in the Central and Northern provinces of country.

In this perspective and in the scope of the Education Strategic Plan for the four years 2012-2016, DINET is intended to launch Distance Learning in Technical and Professional Education to serve as an instrument to reduce geographic and gender disparities, and increase opportunities of access to education for the youth in the country.

Objectives

- To ensure technical training for the youth at school age in order to prepare them to have a profession;
- To develop the basic qualities of personality in youth, educating them to take a correct attitude towards work;
- To develop the skills of analysis and synthesis, research and innovation, organizational and scientific work awareness in youth;
- To encourage youth to acquire knowledge on health and nutrition and environmental protection;
- To reinforce government's effort in developing actions to reduce geographical and gender disparities;
- To increase opportunities for access to education for the youth of all ages and social classes;
- To encourage youth to develop the taste of attending Technical and vocational Training courses;
- To encourage youth of both sexes to embrace entrepreneurship and self-employment.

Methodology

- At the central level the management of the program should be assured by 02 or 03 technicians, 01 provincial supervisor and 01 management officer at the centre of student support (CAA) based at the training provider institution;

- The Administration and Management of the courses will be held centrally from the DINET in close coordination with provincial supervisors and managers of Student Support Centres (CAA) operating in pilot institutions;

- A centre for student support will be allocated in each of the training institution which will be responsible for all the activities in support of the student;

- It is the task manager at the CAA to establish the connection between teachers and students, with provincial supervisors and with the central administration at DINET for management orientation and advice;

- The project aims to start with the Electricity courses (Industrial Branch) and Restaurant and Bar (Hotel and Tourism), on a pilot basis to enable monitoring, consolidation and improvement of the system for the expansion phase;

- The Electricity course will take place at the Industrial Institutes of Maputo, Industrial and Commercial of Beira, and Industrial and Commercial of Nampula, and the Restaurant and Bar course at the Commercial Institute of Maputo and Professional School of Massinga;

- The advertising and publicity of the courses will be done via the official channels used to market other types of education (eg: TV, community radio stations, newspapers, leaflets etc.);

- The process of registration and / or enrolment will take place at the CAA, with support of the task manager allocated for this purpose;

- The student must have an individual process filed in the school office where the CAA functions;

- The production of generic and manuals support modules will be do with the support of partners, hired experts and Technicians from IEDA, according to the courses to be determined;

- Students will acquire theoretical and practical knowledge from the following material:

- Available in the Platform (modules, simulations, and practical exercises scheduled for the course);
- To be prepared for the defined courses;
- Educational acquired by the institution and placed in the Library; 2 Available for sessions of practical sessions in laboratories and workshops;

- The practical sessions will be held during the week and it will be the task manager to set and adjust the time according to plan of activities/work;

- The evaluations will be at presence in the classroom (theory and practice);

Achievements

In order to achieve the objectives of this project it will be important to create the following conditions:

- DINET technicians training on development of course materials, planning and strategic management, Administration and Management of Distance Education;
- Training of technicians in Media Management and Computer Auxiliary equipment for the operation of Distance Learning in Technical and Professional Education;
- Recruitment / contracting of experts for training the national technical staff;
- Study visit trips and exchange of experiences with institutions holding strong background on the subject matter;

- Rehabilitation of workshops and laboratories and equipping them with classroom furniture and other materials;
- Decision/Definition on how and where practical sessions will take place and what conditions will be created there (laboratory and workshop);
- Training of provincial supervisors and learners' support centre managers;

Expected Outcomes

- Technical training assured for youth at school age out of school and prepare them to have a profession;
- Basic qualities for personality developed, educating them to take a correct attitude towards work;
- Analytical and synthesis, research and innovation skills developed, organizational and scientific work awareness in youth;
- Distance learning developed with the aiming to reduce geographical and gender disparities;
- Distance learning developed aiming to increase opportunities of access to Technical and Vocational Training for youth and adults of all social classes;
- The taste of attending Technical and vocational Training instilled in youth of both genders;
- Youth of both genders encouraged and stimulated for entrepreneurship and selfemployment throughout the training.

Target people

- Youth and adults without vacancies in presential courses of training institutions;
- Youth and adults without time to attend presential courses at the training institutions;
- Youth and adults living in distant locations from training institutions;
- Workers who need training to improve their professional knowledge, skills and academic levels;
- Other stakeholders (provided they have the minimum requirements);

Project Strategy

To ensure the success of the project DINET has relies on the existing qualified and experienced technicians, in the existing infrastructure in the TVET institutions selected to accommodate the CAA, the existence of LEARNMATE platform that already has professional electricity course modules, the possibility of installing computers with Internet access in the CAA, the support from partners and the existence of interactive Communication whiteboard in TVET institutions.

Premise and project risk analysis

To ensure the effective introduction of distance learning in TVET various capacity building actions were developed at different levels and organizational units. Thus, to show the feasibility of the project, DINET ensures:

Strengths

- That the introduction of distance learning is an objective foreseen in the strategic plan of education;
- The existence of qualified staff with experience in teaching;
- The existence of infrastructure for the operation of CAA;

- The Existence of LEARNMATE platform containing technical and professional modules;
- The existence of computers in the centres of learner support;
- The existence of interactive communication whiteboards;

Weaknesses

- Doubts on the equivalent between distance learning and presential courses;
- Little access to computer facilities;
- Distance from learners' residences to learners' support centres;
- Weak incentives for tutors / managers;
- Poor experience of technicians involved in the field;

Threats

- Scarce information about distance learning;
- Poor adherence from the expected target public;
- Lack of funding;
- Poor dissemination in the media;

Opportunities

- Lack of similar experiences in the public TVET institutions;
- Cramped vacancies for candidates seeking for training in the existing TVET schools;
- Increased demand for Technical and Professional Training;

APPENDIX 3 A brief history of Distance Education in Mozambique

The experience in distance education in Mozambique is not all that recent. This section presents a brief review of some past DE projects in order to understand existing levels of experience and identify aspects that may be relevant or useful to keep in mind in future projects. In the earlier chapters of this history, there is little mention of the use of ODL for TVET, at least in the public sector. Some relatively small private-sector initiatives did appear early on, offering the typical range of correspondence courses in radio and TV maintenance and other such technical training topics. The early applications of ODL in the public sector were for teacher training and professional development. This of course does qualify as category of vocational education and training.

Instituto de Aperfeicoamento de Professores (IAP) – Institute for Teacher Upgrading

The birth of this program was a decision within MINED, the Education Ministry in Mozambique, in the early 1980s to upgrade under-qualified primary school teachers. At the time they made up around half (10,000) of the total school teaching population. The program was supported by the MINED, by UNESCO and by the "Instituto de Radio-Difusão Educativa da Bahia (IRDEB), an educational radio institution based in Salvador, Brazil. Some training was also carried out by the International Extension College UK. Staff were trained in print and radio materials production and the running and evaluation of distance teaching activities. Courses began in 1984 and ran until 1987. However, due largely to political unrest and resultant lack of resources for education in general, the project failed after two years or so.

A new IAP program was a planned during 1994-96. The first phase of this was designed for 3,000 teachers in five provinces, with 112 study centres. Fifty modules were produced, divided into professional modules and general training. The printed material was written in a self-study format, with embedded self-assessment questions. The new version of the IAP programme no longer used radio as one of the media. The project had the support of the Centre for Educational Technology from Brasilia (CETEP), UNESCO, the World Bank and UNDP. This project is important in the present context as, with some changes over the years, it is still operational. Furthermore, IAP was recently reorganized and renamed as the Institute for Open and Distance Education (IEDA) – which will be described later as an important player in recent progress towards the implementation of eLearning.

Instituto de Formação Bancária de Moçambique (IFBM) – Institute of Bank Training

This private-sector institution has offered distance education since the 1990's, originally using materials adapted from a Portuguese bank training institute. These VET courses were validated and approved by the government to be equivalent to 12 years of general education plus professional training. The courses began in 1994 with 650 students and the first graduates finished in 1996 (220 out of 650). This programme is relevant in the present context as it is still active and growing, and since over a decade now has been offering some of its courses via eLearning, utilizing the Moodle LMS as a delivery platform.

English Secondary School Upgrading Programme not covering schooling

This project was coordinated by the MINED Secondary School Directorate. Responsibility was later transferred to the Pedagogical University (UP). The aim was to upgrade all English teachers in secondary schools and to revise the English curriculum in schools. Given that UP is now also engaged in other distance education initiatives, including eLearning, and given that UP management has expressed a willingness, even desire, to collaborate with other institutions, the infrastructure of this institution, now the largest university in the country and with a presence in most Provinces, could possibly be utilized as a starting point for new collaborative initiatives in distance education.

Secondary School Teacher Training in French and Mathematics

These were really two separate projects, but both were executed by the Pedagogical University (UP) and both were supported financially and technically by France. The projects were aimed at trainee teachers in the regular UP secondary teacher education program. This project is interesting in the present context as it represents a dual-mode, "blended-learning" approach to course delivery – although the distance learning component of the blend was not at the time electronically delivered. The project is also interesting in that it used teaching materials that were imported from abroad (France). Given that the content of one course was the French language, this was a special case where little translation and adaptation was required. However, the Teaching of Mathematics project also used materials imported from France. In this case, full translation and adaptation was undertaken. This project can therefore serve as a local experience in the practical aspects of materials translation/adaptation and as a practical case of "repurposing" (reusing) learning materials.

In summary, given the nature of the last three abovementioned projects and given that they were located in a Pedagogical University interested in researching pedagogical questions (including questions related to effective distance-teaching methodologies), they served as the basis for creation of a home-grown research-and-development agenda, thus helping to create a cadre of educational professionals with a sound grounding in the principles and practice of ODL.

Public-sector Adoption, Implementation and Regulation of ODL

The process of modernisation and rapid expansion of communication infrastructures in the country led to the adoption of distance education all over the country, initially through the setting up of many private-sector, for-profit distance learning providers. This probably accelerated the move to define a national policy. The national education policy emphasized access to education to an even greater number of citizens and to improve the quality of services delivered at all levels and kinds of education. The Strategic Plans of MINED and MESCT defined the expansion of educational opportunities as one of its main objectives, and identified distance education as one of the routes to achieve this.

1. A National Policy on ODL

In 2000, the then Ministry of Higher Education, Science and Technology (MESCT) presented a request to the World Bank to support the expansion of Higher Education. The process of evaluation of this request by the World Bank continued into 2001, and in parallel to this, on the advice of the Council of Ministers, a joint commission formed by MINED and MESCT prepared a policy document defining how distance education should be utilized, planned, developed, implemented and regulated nationwide. This policy document (Distance Education in Mozambique, December 2001) became the initial blueprint which guided the expansion of use of distance education, principally in the public sector, although it did also influence private-sector initiatives.

As, at this time, the World Bank had already approved a loan of approximately \$60million to support Higher Education expansion, with about 10% of this earmarked for the implementation of distance education, it turned out that the implementation of the strategies defined in this new policy was undertaken largely by MESCT, until early 2005 when Government reorganization closed MESCT and redistributed its responsibilities between MINED (who reacquired responsibility for Higher Education) and a new Ministry of Science and Technology. Thus, from 2005, MINED was charged with all matters relevant to distance education, at all three levels of the general education system and also in the TVET sector - although the latter was not clearly defined until, between 2006 and 2010, COREP developed and implemented a TVET reform policy (see previous section of this report for details).

The main arguments for the use of ODL mentioned in the 2011 policy paper were to offer new and more accessible educational opportunities, not only through formal courses (at all levels) but also through non-formal actions of education, such as:

- Professional training courses for in-practice individuals (e.g. teachers, nurses, etc.);
- Preparatory courses for candidates to higher education;
- Non-formal courses;
- Continuous updating and training courses;
- Community management, human resources management, management of forestry resources, gender mainstreaming courses, etc.

Some of the driving forces behind the new policy, mentioned in the document, included:

- increased incentives to maintain senior staff in their places of birth and in newly
 emerging centres of development, instead of concentrating all opportunities in the big
 cities;
- increased access to knowledge and the building of competence through the availability of resource centres (library resources, including virtual libraries, and new technology to support the process of teaching, learning and research);
- increased educational quality, as distance education may contribute to a more relevant education and to a more flexible and open educational system.

The document also evaluated several alternative models for the management (at government level) of ODL initiatives and proposed the formation of an autonomous national institution, with the responsibility to develop and manage the infrastructures and provide training in specific methodologies for distance education. This institution was be also responsible for research in the area of distance education, evaluating all production, administration and monitoring processes, and to ensure quality in the courses provided through distance education in the country. This institution would be called the National Institute of Distance Education (INED).

2. Implementation Strategies

The principal actions proposed for the implementation of the new ODL policy were:

- 1. The Ministries of Education (MINED) and Higher Education, Science and Technology, (MESCT would collaborate to define policies, strategic orientation and legal framework, for the activities of distance education in the country;
- **2.** The National Institute of Distance Education (INED) would assist MINED and MESCT by proposing concrete actions of distance education and overseeing their implementation;
- **3.** A Task Force of Experts in Distance Education, comprising individuals who are interested and trained in ODL, subordinated to INED, would implement a number of pilot-projects;
- **4.** Other educational institutions would act as providers of resources and implementers of specific ODL projects.

An overriding philosophy was to be the gradual creation of appropriate and viable conditions for ODL, with the maximum use made of existing resources (i.e. without the duplication of resources which would occur if each educational institution were to set up its own department devoted to the design, development and implementation of ODL programmes).

Some of the areas identified for Pilot projects were:

- Teacher training for the secondary and high school levels
- Grade 8, 10, 11 and 12 subjects for adolescents and adults who missed regular schooling
- Preparatory courses to facilitate enrolment in higher education institutions
- Transforming a few existing "high demand" university courses into an ODL format
- An "Open School" Pilot Project to extend access to secondary education in rural areas

3. Outcomes of a Decade of Implementation

During the decade 2001-2010, most of the abovementioned policies and strategies were implemented at least in part, but on a longer timescale than originally planned. As mentioned above, much of the funding for the ODL initiative was obtained from a World Bank loan to support the expansion of Higher Education over a five-year plan. In 2005, progress was evaluated and a further five years of World Bank support were negotiated. By 2010, the state of ODL plan was as follows.

- 1. The Ministries of Education (MINED) and Higher Education, Science and Technology, (MESCT collaborated for only a short time, as midway through the decade the Ministries were restructured: MESCT ceased to exist and its Higher Education responsibilities were transferred to MINED. By that time, a special department for ODL had been established in MINED, so all ODL activities at all levels of the educational system were now under the jurisdiction of one ministerial organ. In addition COREP had concluded its plans for reform of the TVET sector and the TVET reform project, PIREP, was well under way.
- 2. The National Institute of Distance Education (INED) was founded early in the decade and set about the implementation of the Government's ODL plan. However, one aspect of the original concept for INED was not implemented item 3 below so that INED acts principally as a regulatory and in some cases funding body, rather than an executing agency.
- 3. Instead of recruiting and employing a Task Force of Experts in Distance Education, comprising individuals who would implement ODL projects, INED delegated the course design, development and implementation activities to other bodies. Initially some existing universities that had an interest in developing a given course were supported by INED in this process. Other universities acted as consulting agencies, contracted by INED, to develop courses for other schools and institutions to implement. Later in the decade, the IAP programme, originally devoted exclusively to offering distance courses for primary teacher training, was restructured and renamed as the Institute of Open and Distance Education IEDA and assumed the role of course developer, implementer and, in some cases manager and evaluator, of ODL initiatives at other levels of the educational system.
- 4. Other educational institutions did indeed act as providers of resources and implementers of specific ODL projects. However, they took on a more independent role than had been envisaged in 2001. As independent contractors or consultants to MINED (via INED), many of the institutions set up their own ODL departments and some also set up their own network of regional learning centres.

Implementation of the five pilot projects originally proposed in the 2011 policy document:

- <u>Teacher training for the secondary and high school levels</u>. This project was undertaken by the Pedagogic University (UP). It implemented of a new much shorter Bachelor-in-Education degree program. The ODL pilot project became a part of this initiative, the intention being to develop conventional campus-based and ODL versions of this new programme.
- <u>Grade 8, 10, 11 and 12 subjects for adolescents and adults who missed regular schooling</u>. This pilot project was subcontracted to a university that had already acquired some expertise in ODL. The courses were then implemented in the schools with support from INED.
- <u>Preparatory courses to facilitate enrolment in higher education institutions.</u> This was also subcontracted to a (private-sector) university to design, develop and produce all materials.
- <u>Transforming a few existing "high demand" university courses into an ODL format</u>. The Eduardo Mondlane University, which already had an ODL department of its own, developed some courses for implementation in its own institution, with some support of the project via INED.
- <u>An "Open School" Pilot Project to extend access to secondary education in rural areas</u>. This
 project is to some extent an exception, in that it was in large part designed and implemented in
 the field under the supervision of MINED. The project involved the production of learning
 materials in the form of a self-study modules, to cover all years of all disciplines of the secondary
 school curriculum, so adults and adolescents in rural areas, too distant from the nearest
 secondary school to attend regularly, could study at home and maintain contact with their tutors
 (teachers in the nearest school) by distance communication and occasional visits to the school.
 This project received funding from DfID (UK Govt.) and technical support from the National
 Extension College in the UK in the area of planning and the Commonwealth of Learning in the
 design and development of learning materials.

APPENDIX 4: DIARY OF MEETINGS AND ACTIVITIES A chronological account of work performed

This appendix describes tasks performed and key events on a day by day basis.

Week 1.

Monday 25/5/15.	Meeting with Gilberto Botas in DINET. Presentation of ToR and proposed work and travel plans. These were agreed in principle, though some adjustment to travel and meeting dates was suggested. Joseffa Zibia and Manuel Caetano, members of the DINET team planning the proposed ODL project, would set up the schedule of meetings and any special travel arrangements. The remainder of this first day was spent on desk study of the background documents which the consultant had received from COL.
Tuesday 26/5/15	Meeting with Joseffa Zibia and Manuel Caetano in the DINET offices. During this meeting, the consultant requested DINET to arrange meetings with the other stakeholder institutions and ministerial organs that are mentioned in the project description presented by DINET to COL (see Annex 2).
Wednesday 27/5/15	Day was devoted to desk study of available documents.
Thursday 28/5/15	Joseffa Zibia reported that it was proving difficult to arrange meetings with the project stakeholders for the immediate days as most of them will be participating in the forthcoming meeting of TVET directors and therefore are busy preparing their presentations and travel arrangements. He pointed out that it would be easier to meet the stakeholders during the three days of this meeting. Therefore it would be important for the consultant to be at the meeting for the full three days in order to meet not only the directors of the five Technical and Commercial Institutes.
Friday 29/5/15	Day spent mainly on desk study of available documents. Further contact was made with Joseffa Zibia in order to verify whether any meetings with stakeholders had been set up, particularly with the project's two ODL partners INED and IEDA
Week 2.	
Monday 1/6/15	Half day spent on desk study of available documents. The other half was spent on a visit to the Instituto Superior Dom Bosco (ISDB) which, as a technical teacher training institution, is listed as one of the partners and stakeholders in the proposed project. It turned out that the director of the ISDB would also be participating in the meeting iin Chimoio.
Tuesday 2/6/15	Day largely spent on arranging the logistics of travel to and from the directors' meeting in Chimoio, including the necessary changes in dates of travel between Maputo, Beira and Nampula in order to fit in the three day director's meeting in Chimoio as well as the field visits to the Beira and Nampula Institutes.
Wednesday 3/6/15	First day of the TVET Institution directors' meeting (in Portuguese: ENDET). During the morning, apart from the many short formal/political opening speeches and presentations, the key sessions of note were devoted to: presenting the ToR for the XXV ENDET; presenting, debating and approving

the programme and work plan for the three day event; presenting, analysing and debating the principal achievements of the TVET sector during the last ten years. All three of these sessions were led and the presentations were made by Gilberto Botas, the director of DINET. The afternoon was devoted to several action research" presentations by different TVET institutions on their experiences in implementing the new competency-based qualifications and their related new curricula Thursday 4/6/15 Second day of XXV ENDET. The morning was devoted to presentations and discussions on the following topics: the CTEM project (Canadian Cooperation with COREP}; the PRETEP project (Italian Cooperation with DINET and several training institutes); the structure of the professional and technical training system and how it is being reformed. The afternoon was devoted to group discussions. This presented the opportunity for the consultant to meet individually with each of the directors of the five institutions selected to participate in the eLearning pilot project. Friday 5/6/15 Third day of XXV ENDET. The bulk of this day was devoted to the following presentations and discussions: the TVET sub-sector's structure; the Statute of the MCTESTP (the new Ministry of Science and Technology, and Higher, Technical and Professional Education); the new Vocational Education Act; the Statutes of ANEP; the 5 year plan for 2015 to 2019; the new electronic information management system and the TVET database. In the afternoon, a meeting with representatives of Cooperação Italiana was scheduled. The Italian Government's funding agency supports TVET projects in several institutions. They wished to discuss the COL plans as they also had been thinking of introducing eLearning in some of their projects. Week 3 Monday 8/6/15 Visit to the Industrial Institute, Beira – Day 1. Tuesday 9/6/15 Visit to the Industrial Institute, Beira – Day 2. Wednesday 10/6/15 Visit to the Industrial Institute, Nampula – Day 1. Thursday 11/6/15 Visit to the Industrial Institute, Nampula – Day 2.

Friday 12/6/15(Morning) Meeting with Gilberto Botas and the DINET team.(Afternoon) Visit to INED – National Institute for Distance Education.

Week 4

- Monday 15/6/15 (8:00) Meeting with Martin Johnstone, DIfD, UK Govt.
 (10:00) Meeting with Celso Timane, Director of CENFOSS (ICT and Moodle).
 (14:00) Visit to Industrial Institute, Maputo Day 1.
- Tuesday 16/6/15All day visit to Commercial Institute, Maputo(Evening) Leave for Xai Xai (half way to Massinga) by car.
- Wednesday 17/6/15 (Early morning) Complete travel to Massinga by car.
 All day visit Commercial Institute, Massinga.
 (Evening) Return to Xai Xai (half way back to Maputo) by car.

Thursday 18/6/15 (Early Morning) Continue return travel as far as IEDA (in Maraquene).
 (11:00 – 15:00) Visit to IEDA – Open and Distance Learning Institute.
 (Evening) Complete return travel by car to Maputo.

Friday 19/6/15(9:00-12:00) Second visit to Industrial Institute, Maputo.(13:00-14:30) Meeting with Riccardo Tatasciore, eLearning consultant.((15:00-16:30) Meeting with Halenio Nualia, Dom Bosco Institute

Week 5

Monday 22/6/15	(9:00-12:00) Meeting at INTIC – the government's data processing centre.
	(13:00-15:30) Final meeting with Gilberto Botas and the DINET team. The meeting was also attended by António Archetti, another Italian eLearning consultant, colleague of Riccardo Tatasciore (both these consultants have been assisting DINET in the planning of their eLearning initiative).

Tuesday 23/6/15(9:00-12:00) Second meeting at INTIC(14:30) Return air travel to UK via Addis Ababa.

APPENDIX 5: REPORT ON THE XXV ENDET ANNUAL MEETING OF TVET INSTITUTION DIRECTORS

Chimoio Conference Centre – Manica Province – 3-5 June, 2015

A. INTRODUCTION: objectives and scope of the conference

The XXV NATIONAL MEETING OF DIRECTORS OF SCHOOLS AND TECHNICAL INSTITUTES (In Portuguese: XXV ENDET) took place from 03 to 05 June 2015, in Gondola District, Manica Province. This year's "motto" was: "Training for Work; Skills for Production; Development for the Country ".

The meeting was chaired by the Minister of Science and Technology, Higher Education and Vocational Technical (MCTESTP), Professor Eng Jorge Oliver Penicela Nhambiu. Also presiding were: the Vice Minister of Labour, Employment and Social Security, Osvaldo Petersburg; the Provincial Director of Education and Culture (DPEC) Stephen Rupela; the Administrator of the Gondola District, Ana Chapo; the National Director of Professional and Technical Education (DINET), Gilberto Antero Botas; The National Higher Education Director, Sandra Brito; the Executive Secretary of the Professional Education Reform Commission (SE-COREP), Edmundo Jossefa.

The principal issues addressed:

- Establish and strengthen mechanisms for financing technical schools;
- Improve the management capacity of TVET institutions;
- Improve the integration of cross-cutting issues, by strengthening collaboration between the various entities involved in the Technical and Vocational Education process;
- Increased involvement of the productive sector in Technical and Vocational Education;
- Implementing the Strategy of Teacher Training for Technical and Vocational Education and ensure the recruitment of trainers;
- Continue the program of equipping laboratories, workshops and other infrastructure;
- Seek and find a common vision of Technical and Vocational Education among all players in the subsystem, in order to prepare a Comprehensive and Sustainable Strategy that includes all relevant components.

The program examined the following topics:

- 1) Key TVET sub-sector achievements in the last 10 years
- 2) Review of the implementation of TVET Reform: 2006- 2014
- 3) National System of Professional Qualifications
- 4) Experiences of schools in implementing the new NVQ system:
- 5) Review of the evaluation system.
- 6) Achievements and prospects of specific Programs

i. CTEM- Canada project,

ii. PRETEP - Italian Cooperation

iii. UTA / PEP - Portuguese Cooperation

7) Presentation and discussion of the TVET sub-sector's structure

8) Presentation of the Statute of the MCTESTP (the new Ministry of Science and Technology, and Higher, Technical and Professional Education)

i. Vocational Education Act

- ii. Proposal of the Statutes of ANEP
- 9) Presentation of QGP (5 year plan) for 2015 to 2019, focusing on TVET
- 10) Presentation of the new electronic management system and the TVET database

B. SOME OF THE KEY TOPICS DISCUSSED

Topic 1). Key TVET sub-sector achievements in the last 10 years

Gilberto Botas, the Director of DINET, presented a retrospective of the last ten years of Professional and Technical Education in the country. He said that until 1991 the Professional/Technical Education Subsystem found itself integrated into the Ministry of Technical and Vocational Education, as SETEP which comprised two main areas: Technical and Vocational Education and Training; Professional Development. Later, with the move of Training and Professional Development to the (then) Ministry of Labour, SETEP was abolished and in its place DINET was created.

The following DINET accomplishments were emphasized:

- Construction and rehabilitation of technical education infrastructure across the country;
- Transformation of Arts and Crafts Schools into vocational schools;
- Transformation of some basic level Technical Schools into middle-level institutions.

Then, he described some challenges faced by the TVET sector, for example:

- Expansion of the technical education institutions network to reach more young people and adults;
- Attraction of a higher number of girls;
- Introduction of Distance Learning.

Topic 2). Review of the implementation of Vocational Education Reform: 2006- 2014

Representatives of SE-COREP presented the outcomes of the implementation of Vocational Education Reform (REP) in the period 2006- 2014.

The strategic objectives were defined as follows:

- Establish an institutional framework for the administration and management of Vocational Education;
- Create a National Professional Qualifications Framework and training systems based on Competency Standards;
- Increase the capacity and improve the quality of training institutions;
- Increase access of citizens to vocational education, especially in rural areas and the informal sector.

With regard to the implementation of the National Professional Qualifications System, the following key reforms were named:

- Qualifications and standards approved by the production / employment sector;
- Training focused on the practical performance of the trainee;
- Multiple output points from the TVET system to the world of work;

• The creation of a National Framework of Professional Qualifications (QNQP).

However, several challenges were encountered during the TVET reform implementation process:

- Development of NVQs that are relevant for the existing labour market;
- Review and updating of NVQs that were approved more than five years ago;
- Continuation / improvement of process of preparation of teaching materials;
- Management / reactivation of existing and creating new training centres;
- Ensuring scientific and technological training;
- Ensuring pedagogical training on competency-based training principles/procedures;
- Implementation of the new "Training of Trainers Strategy";
- Encouraging the use of practical, hands-on, training methodologies.

Topic 4). Experiences of schools in implementing the new NVQ system

This double (or rather, triple) presentation started with a review by ministry representatives of the objectives, developmental processes and implementation procedures of the new national vocational qualifications (NVQ) system and the associated competency-based curricula. This project, originally a part of the (World Bank funded) programme for the reform of professional education (PIREP), Is now a permanent integral part of the nation's TVET system ,as defined in Law #23/2014 (September 23). Among its many directives, this law sets up a Professional Education Authority (ANEP) which will assume and render permanent the functions of the PIREP programme. Following on, the experiences of implementing the new NVQs and the CBT curricula were presented by two of the implementing institutions. Both institutions used a modified SWOT-analysis schema to present their findings. Both sets of findings are reproduced here in full as presented, in order to give some insight into the challenges of implementing this aspect of the TVET reform process.

Organization A

STRENGTHS

1. Provision of short courses - improves the training of students and contributes to the community's youth empowerment;

2. Existence of facilities: workshops, laboratories, classrooms and school furniture;

3. Trainers trained to implement Curricula Based on Competency Standards (CBT);

4. Trainees gain experience in a company or on a production line, which ensures the acquisition of practical and quality training and facilitates absorption by the labour market.

WEAKNESSES

1. Much waste of teaching time for assessments and reassessments: most of the teaching time of a module is dedicated to evaluations, re-evaluations and corrections;

2. Lack of quantitative parameters (notes) to classify rank) learners – potential employers complain that the qualitative results of the evaluations do not highlight the best students.

3. No consistent rules for Assessment – this weakens the whole process of (re)evaluation;

4. Excessive "punishment" of students who fail a module at one level and so cannot move to the next level – this results in high drop-out rates and "waste" of candidates;

5. Lack of motivation of trainees affects the performance of their learning activities.

ORGANIZATIONAL CONSTRAINTS

1. Delays in the verification process for the issuance of certificates for completing a level or for issuance of a qualification;

2. The existence of a large number of theoretical summative evaluations is a huge financial burden in production of tests and feedback, for an already resources-scarce institution;

3. High costs of workshop equipment and teaching materials for conducting practical classes;

4. Delay in completion of the modules because of lack of financial conditions for the production and reproduction of various forms of evaluations and re-evaluations;5. Difficult to get certain companies to recognize the new qualification certificates.

IMPROVEMENT PROPOSALS

1. The proposal for the Assessment Regulations should be reviewed and approved for official use as the definitive instrument. Also recommend the approval of a "Trainer's Statute";

2. The allocation of budgets should be based on the needs of each training institution and the increasing numbers of trainees;

3. Educational models from other countries should be adapted to the reality of this country;

4. Define a number of modules which the student can fail (e.g. up to 2 modules), and still proceed to the next level, completing the previous level of qualification later on;5. Assign a quantitative value to the level of acquired skills by assigning grades or

Organization B

STRENGTHS

scores.

1. Possibility to enter the labour market at the end of each level - flexibility of curriculum;

2. Possibility to monitor the progress of trainees in every moment of learning;

3. External verification enables one to assess the work of teacher and student;

4. The internships performed at each level help prepare students for the following qualifications and for future working life;

5. Certification by completing a level allows entry into the labour market if necessary.

WEAKNESSES

1. Qualitative assessment – lack of grading the classification does not stimulate competition among students;

2. Too many revaluations - facilitates the occurrence of fraud and promotes lack of interest in the study;

3. High number of assessment tools reduces the time for teaching and promotes the flight of students from classes and revaluations;

4. Certificates that do not have scores to help distinguish the competence of graduates;

5. Delay in issuing the certificates compromises / upsets subsequent plans of graduates;

6. Lack of understanding of the new skills frameworks by the supervisory institutions (DPEs, SDEs) and the productive sector in general.

ORGANIZATIONAL CONSTRAINTS

- 1. High administrative costs in file / data management;
- 2. Excessive costs for the repair of equipment (photocopiers and printers);
- 3. "Cramped" (over-stretched) institutional budget;

4. Prolonged use of an "Assessment Regulation" which has not been formally approved makes for difficulties to apply evaluation procedures correctly and systematically;

5. Limitations of the workload.

IMPROVEMENT PROPOSALS

- 1. Conversion of qualitative assessment system for quantitative;
- 2. Reduce the number of revaluations;
- 3. Definition of a minimum percentage for progression from one level to the next;
- 4. Decentralization of the certificate issuance process;
- 5. Creation of an online system to facilitate timely access to data for certification.

Topic 6). Achievements and prospects of specific donor-supported Programs

The representatives of three ongoing projects presented their achievements to date and future plans/prospects: CTEM (Canada}; PRETEP (Italian Cooperation).

i. CTEM- Canadian Cooperation. This project is a partnership between the new Ministry of Science and Technology, Higher Education and TVET (MCTESTP), represented by SE-COREP, and Colleges and Institutes Canada (CICAN) which represents the majority of Canadian TVET institutions. The project, financed by the Government of Canada, is planned to run from 2014 to 2020. It is based on the principle of "twinning" between Mozambican and Canadian TVET institutions, aiming to support the Mozambican partners in the following activity areas: curriculum redesign and course/program implementation on a competency-based approach; teacher professional development in both pedagogical and technical skill areas; training and development of institutional leaders and managers; student support services; gender mainstreaming; supply of essential equipment and infrastructure. The presenter, Alex Stephens, representing CICAN, reviewed the achievements of the first year of the project and outlined the objectives and planned activities for the remainder of the project in each of the above-mentioned activity areas.

ii. PRETEP - Italian Cooperation. This programme of cooperation has been running for many years and is active in several educational sectors, including TVET, principally in two areas: Hotel and Tourism; Agriculture. The Areas of activity include: Training and development of TVET teachers and managers; renewal and upgrading of infrastructures; supply of equipment, training materials and means of transport; creation of a fund to support the operating expenses of technical schools and institutes; installation of two "community centres for competency development"; assistance in the management of schools and institutes; strengthening of the institutional capacity of DINET. In addition, although the PRETEP project is not directly involved in the design and development of new competency-based curricula, it has supported the activities of the PIREP project in this area, in several TVET institutions including: Instituto Comercial de Maputo (tourist guide; hotel reception;

kitchen; restaurant and bar); Escola Profissional de Massinga (restaurant and bar). It is significant from the perspective of the project proposed by DINET to COL that the two above mentioned schools/institutes that work in the Hotel/Tourism sector and have received PRETEP project support are exactly those that are to participate in the eLearning pilot project. It is also significant that the representatives of Cooperação Italiana at the conference sought me out and requested a meeting as they also have plans (not yet implemented) to introduce eLearning into TVET projects which they currently support.

The last comment above is also significant in the context of the general discussion which followed the presentations of the internationally-supported projects. The comment was made that there is need for greater coordination between the ministry and the various programs that support TVET in order to optimize effort and the use of resources.

Topic 8). Presentation of the Statute of the MCTESTP

MCTESTP is the Portuguese abbreviation for the new *Ministry of Science and Technology, and Higher, Technical and Professional Education*. Representatives of this ministry presented the statute of MCTESTP which shows the proposed structure and the main lines of action. Focusing as it did on the tasks of DINET, this presentation created a great deal of interest among the participants. Among the many sub-topics of this presentation, the following were of special importance to TVET:

i. Vocational Education Act. This act – law no. 23/2014, passed on September 23, 2014 – defines the objectives, structure and functions of all the key components of the TVET system of Mozambique, including new components introduced (experimentally up till now) by the program of TVET system reform (PIREP), such as the use of NVQs and competency-based curricula as a means of defining and achieving performance standards and quality criteria. It also establishes and defines the functions of a new permanent *National Authority for Professional Education* (ANEP) which takes over and renders permanent the functions and achievements of the TVET reform programme PIREP. The presentation outlined the main innovations introduced by this new Act. The following discussion analysed the practical implications for the existing system and its component schools and institutes.

ii. Proposal of the Statutes of ANEP. The MCTESTP representatives then presented a proposal of the statutes of ANEP. After an open discussion to clarify any doubts and hear any additional suggestions, the proposed statutes were approved by the majority of the participants.

Topic 9). Presentation and discussion of the QGP (5 year plan) for 2015 to 2019, focusing on TVET

The Government's Five-Year Plan for 2015-19 was presented with emphasis on the priorities for the period in question. In this context, the following strategic plans were presented and discussed:

- Strategy for Science, Technology and Innovation;
- Strategic Plan for Higher Education;
- Strategic Plan for Professional and Technical Education (ETP in Portuguese).

In the ensuing discussion, it was emphasized that for the ETP sector the top priority is Developing Human and Social Capital.

Topic 10). Presentation of the new electronic management system and the TVET database

The MCTESTP has commissioned the development of a database for the ETP (TVET) sector. This platform was displayed to conference participants by the team of developers. It is quite clearly an important planning tool which will allow the continual updating of data according to type of school,

region of country, gender of students, data on teachers, among other important statistics. Although the platform is completely functional, it has not been released for public access as the data currently in the system is being checked, verified and where necessary corrected or updated by competent departments of several ministries.

C. CLOSURE OF THE CONFERENCE – FOCUS ON THE ENVIRONMENT

The last day of the work of XXV ENDET, 05 June, coincided with the celebration of "World Environment Day". The closing session of the conference was therefore used as an opportunity to promote reflection on best practices for the protection of ecosystems and maintenance of different forms of life. In this context, the Technical and Professional Education sector has the challenge of promoting initiatives, courses and curricula that promote the use of renewable and sustainable technologies, for the protection of the environment and maintenance of life on Earth.