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Improving access to postgraduate training in Crop Protection for agricultural practitioners through distance learning at the University Of Nairobi, Kenya

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Abstract

The Department of Plant Science and Crop Protection of the University of Nairobi launched the first postgraduate training by distance learning in 2010. Development of the Open and Distance Learning (ODL) mode of delivery was based on client-driven demand for a flexible mode of learning by agriculture graduates who had specialized in Crop Protection at final year at undergraduate and holding management positions in horticulture industry. This demand was necessitated by the requirement by public and private sector employers that professionals at management positions should have advanced training and skills in order to satisfy the increasingly competitive job market. However, the employers are unable to grant study leave for workers to pursue postgraduate training. Therefore, the ODL mode of delivery was developed to open up opportunities in postgraduate training in Master of Science in Crop Protection. The ODL programme was initiated in 2008, starting with review of curriculum to accommodate open and distance learning mode. Academic and technical staff were sensitized on the need for ODeL mode of postgraduate training. Many feared that it would not be possible to deliver a science-based programme by distance learning due to the practical component involved. The new training approach focused on distance learning based on provision of hard copy manuals because many of the potential students worked in the agriculture sector and most stations were located in rural areas without stable cell phone and internet connectivity. The first ODL intake was launched in October 2010 with a class of 13 students. Every year the programme admits over 15 students and at the beginning of each academic year, the new students are inducted into the ODL mode of training. The main medium of instruction is the print in the form of self-instructional modules. These serve in the place of the teachers as they contain the subject content and instructional devices to guide learners. To support the printed modules, academic support services are provided by face to face tuition sessions held during the semester. The face to face on campus sessions are dedicated practicals, tutorial sessions, continuous assessments, presentation of term papers and consultation with supervisors on thesis research. Through the ODL mode of delivery class sizes have increased from five to about 20 students per intake every year. The approach has maximized the use of limited physical and human resources and significantly reduced the unit cost of postgraduate training. The new frontier is to convert the programmes to full e-delivery since internet connectivity has improved in many parts of the country.

Key Words: agricultural training, e-learning, crop protection, Open and Distance Learning

Introduction

Open and Distance Learning (ODL) is a way of learning remotely without being in regular face-to-face contact with a teacher in the classroom (Simon Midgley, <http://www.thecompleteuniversityguide.co.uk/distance-learning/>). It is a learner-oriented system that allows greater flexibility in learning while students continue with their regular work, provides education for all, promotes lifelong learning, and improves on the economies of scale in education management (Onwe, 2013). Tutorial support is provided via a virtual learning environment, telephone, email, use of radio and television or other online sources. There may be occasional face-to-face encounters with tutors and attendance at week-long summer schools (Simon Midgley, <http://www.thecompleteuniversityguide.co.uk/distance-learning/>). This approach to learning allows easy access to education and training frees learners from the constraints of time and place (UNESCO, 2002). Therefore, it offers flexible learning opportunities to individuals and groups of learners. Media options for delivery of ODL include print, audio tape, videotape, multimedia, computer-aided learning and e-learning platforms such as electronic mail, teleconference, computer conference or video conference (Gbenoba and Dahunsi, 2014; Awolalu, 2010). Customized, self-instructional materials are at the heart of instructional delivery in ODL. Self-instructional materials should stimulate independent learning to enable learning with or without the support of the teacher. Therefore, they should be self-explanatory, self-contained, self-directing, self-motivating and self-evaluating (Awolalu, 2010). They should arouse interest, give estimate of study time, they give aims and objectives, they emphasize on self-assessment, the content is unpacked and more openly laid out and they provide study skills advice (Gbenoba and Dahunsi, 2014).

E-learning is a promising tool for expanding and widening access to tertiary education (Gbenoba and Dahunsi, 2014). Because it relaxes space and time constraints, e-learning can easily admit new comers into ODL by increasing the flexibility of participation compared to the traditional face-to-face mode. In this way, learning who are employed or live in remote rural areas, non-mobile students, and even students outside the country can easily participate in education. Therefore, e-learning allows the learners to study where and/or when they have time to do so (Gbenoba and Dahunsi, 2014). A new concept in ODL is Massive Open Online Courses (MOOCs) which is based on open sources of information that include online courses that anyone can access if they have an Internet connection (Adham and Lundqvist, 2015). This approach allows enrolment of numerous students.

The ODL mode of learning allows students to fit learning around their work and home life, learners can set their pace of study, it allows massive training of professionals at low cost, thereby promoting technical, vocational education and community development (Biao, 2012; Simon Midgley, <http://www.thecompleteuniversityguide.co.uk/distance-learning/>). However, ODL students have the disadvantage of not being able to regularly interact with fellow students and lectures and this may result in loneliness and feelings of isolation. This can be avoided however by frequent online contact with tutors and taking part in virtual forums, virtual help groups and discussion rooms (Tony Bates, 2008). Other disadvantages include lack of ODL policies in most African countries, social acceptance of ODL products (skepticism as to the quality of ODL graduates), lack of adequate lecturers who are trained to run ODL

programmes, low level of utilization of Information Communication Technologies (ICT) in Africa (Biao, 2012). In addition, full utilization of ICT-based ODL strategy in many parts of Africa is constrained by lack of steady supply of electric power, inadequate infrastructure and professional competence (UNESCO, 2002).

This paper describes how Open and Distance learning has enhance access to postgraduate training in Crop Protection for agricultural practitioners through distance learning at the University of Nairobi, Kenya. This mode of delivering postgraduate training was the first of its kind at the University of Nairobi.

Challenges and opportunities leading to development of Crop Protection ODL programme

Development of the Open and Distance Learning (ODL) mode of delivery was based on client-driven demand for a flexible mode of learning by agriculture graduates who had specialized in Crop Protection and holding management positions in horticulture industry. This demand was necessitated by the requirement by public and private sector employers that professionals at management positions should have advanced training and skills in order to satisfy the increasingly competitive job market. Also, an increasing number of employees in agricultural extension service desire to advance in their careers while still maintaining their jobs. However, the employers are unable to grant study leave for workers to pursue postgraduate training. Therefore, the ODL mode of delivery was developed to open up opportunities in postgraduate training in Master of Science in Crop Protection. In addition, funding and the number of scholarships for postgraduate training have declined over the years as the government focuses its support mainly on undergraduate training in order to absorb the increasing number of high school graduates who qualify for university education. However, the increasing number of students at the university is not matched with an improvement of infrastructure. This has led to congestion at the university resulting from non-expansion of lecture rooms and laboratories.

Design of the Crop Protection ODL programme

The Crop Protection ODL programme was initiated in 2008, starting with review of curriculum to accommodate open and distance learning mode. Academic and technical staff were sensitized on the need for ODeL mode of postgraduate training and encouraged to type their hand written lecture notes (Figure 1). The typed notes were further improved to make them interactive by incorporating learning schedules, course objectives and learning outcomes, illustrations, case studies, review questions, references, practical handouts. These were formatted into training manuals. Therefore, the main medium of instruction is the print in the form of self-instructional modules. These serve in the place of the teachers as they contain the subject content and instructional devices to guide learners. To support the printed modules, additional academic support services are provided by face to face tuition sessions held during the semester (Figure 2). The face to face on campus sessions are dedicated practicals, tutorial sessions, continuous assessments, presentation of term papers and consultation with supervisors on thesis research. Other objectives of the face-to-face sessions are to introduce the students to the institution, to Issue the study materials, to give the students the opportunity to consult resources in the library, give the students the opportunity to meet the course lecturers and other support staff, for students to meet and interact with fellow students and to give the students an opportunity to discuss and resolve issues that constrain them.

A programme schedule that contains semester dates and activities for the whole academic year is shared with students before or at the time of registration. This allows the learners to plan and inform their employers in advance when they require time off to attend on campus face-to-face sessions and end of semester examinations. Time tables for the face-to-face sessions and end of semester examinations are sent in advance via e-mail to each student. In order to maintain equity and quality, the ODL students take the same examinations at the same with the full time students. The programme has a coordinator who maintains active contact with each of the learners through e-mail and telephone. At the beginning of the academic year, the Department organizes a one-day orientation session for the newly registered ODL students together with the course lecturers. During this session the students are introduced to the concept of ODL mode of delivery, how to interact with the course lecturers, how to use the self-instructional manuals, how to choose a thesis research topic and develop a proposal concept note.

The choice of thesis research is customized to the convenience of the learner by encouraging the students to conduct research that is relevant to their employer needs. The field experiments may be located within or near the institution where the learner works. In order to monitor and evaluate progress made by each students in thesis research, quarterly reports seminars are held during the second year of study, the students hold a consultation meeting with their supervisors every month and the thesis supervisors visit the field experimental sites at least once each season.

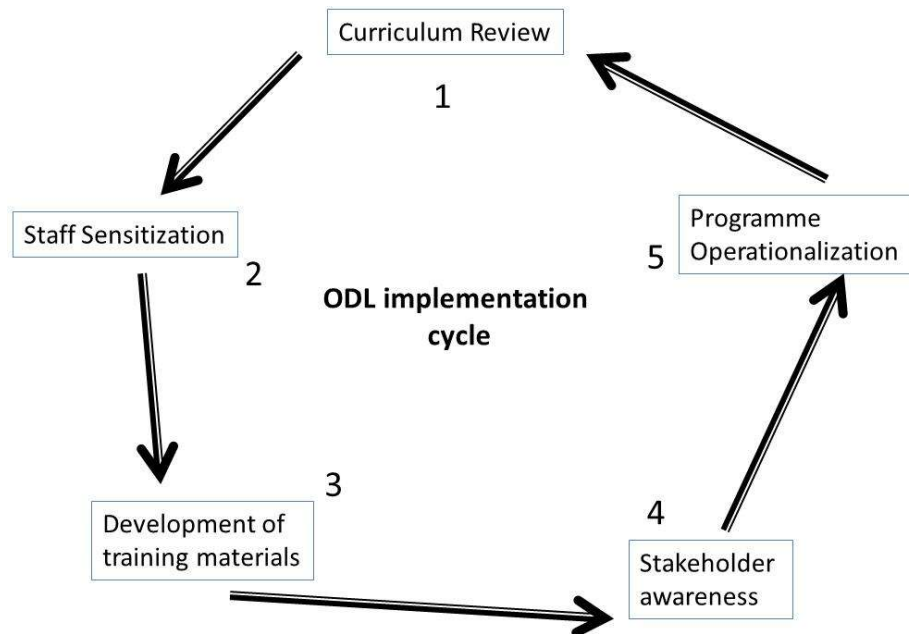


Figure 1. The implementation cycle of the ODL programme

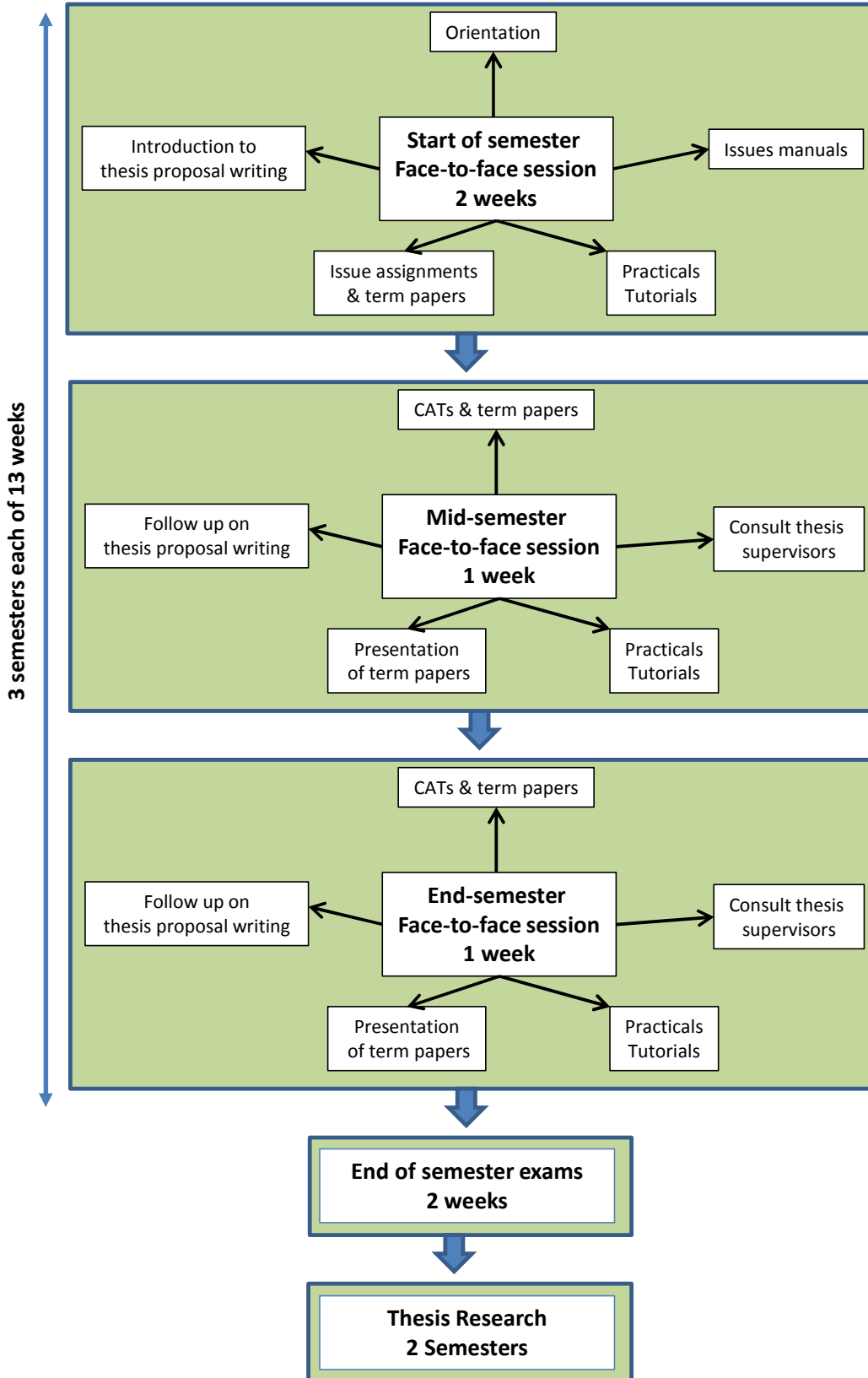


Figure 2. Schematic description of the design of the Crop Protection ODL programme

Requirements for ODL delivery and expectations on the part of the ODL students

In order to effectively deliver the Crop Protection ODL programme, the students are requested to maintain a reliable e-mail address and cell phone contact. The e-mail address enables continuous communication between the students and lecturers for the purpose of issue and return of assignments/ term papers, in addition to communication with the programme coordinator. The cell phone is important when the students want to contact the course lecturers to clarify any issues. In addition, the students are encouraged to attend all the face-to-face sessions and practicals, to submit of quarterly progress reports, assignments and term papers as agreed with lecturers and programme coordinators. Availability for the end of semester examinations as per university schedule is mandatory. Also each student is encouraged to consult with thesis research supervisors at least twice a month. .

The ODL students are advised to avail adequate time for study study by drawing up a time table on how to cover all the course units and thesis research during each week (Table 1). Appropriate time budgeting and management is required so that the students can study each module adequately. They are also encouraged to develop a reading culture. For this to succeed the learners are also encouraged to let their families and associates be aware of the added engagement so as to enlist their support. Each student is requested to reserve a convenient reading space at home and to form study groups and discuss the course materials with fellow learners when opportunities arise.

Time Requirement and Management

Each unit in the Master of Science in Crop Protection consists of 12 course work units plus thesis and each of the 12 taught course work units is of 45 hours duration. These make a total of 540 hours for the course work units. The table below show approximate time requirements for course work units and thesis research:

Table 1. Time budgeting recommended to ODL students for effective learning

	No. of units@45hrs	Total hrs	Semester length (wks)	Hrs per week	Hrs per day (7 days/week)
Semester 1	5	225	13	17.3	2.5
Semester 2	4	180	13	13.8	2
Semester 3	3	135	13	10.4	1.5
Thesis	8	360	45	8	1.1

Benefits from the ODL mode of delivery and challenges

The first Crop Protection ODL intake was launched in October 2010 with a class of 13 students. Every year the programme admits over 15 students and at the beginning of each academic year, the new students are inducted in to the ODL mode of training. Through the ODL mode of delivery class sizes have increased from five to about 20 students per intake every year (Figure 3). The approach has maximized the use of limited physical and human resources and significantly reduced the unit cost of postgraduate training.

However, the Crop Protection ODL programme has undergone through a few challenges. At the beginning there was a lot of inertia to implementation of the Crop Protection ODL programme, especially from staff who feared that it would not be possible to deliver a science-based programme by distance learning due to the practical component involved. Most lecturers in the Faculty of Agriculture have not been trained on ODL mode of delivery and they have challenges in development of training materials and use of online resources

to support the training. The University has organized training opportunities for academic staff to be re-tooled on how to develop self-instructional manuals and convert them in to e-compatible format. The spatial separation of the students from lecturers and other students limits the frequency of consultation, especially for thesis research. Therefore, some students have challenges in designing of experiments, data analysis and writing of thesis. For some students, the demands of employment, family and social commitments make them long to complete the Degree programme. There are instances where the some students take up to five year to graduate while a few completely abscond. In addition, some of the students from agricultural extension service work in areas of the country where facilities are not well developed to support ODL learning. Such remote areas do not have internet connectivity and therefore, the students cannot effectively communicate with lecturers and supervisors through mobile telephone, e-mail and other online methods. Certain thesis research themes require advanced laboratories that may not available at the stations where the students are employed.

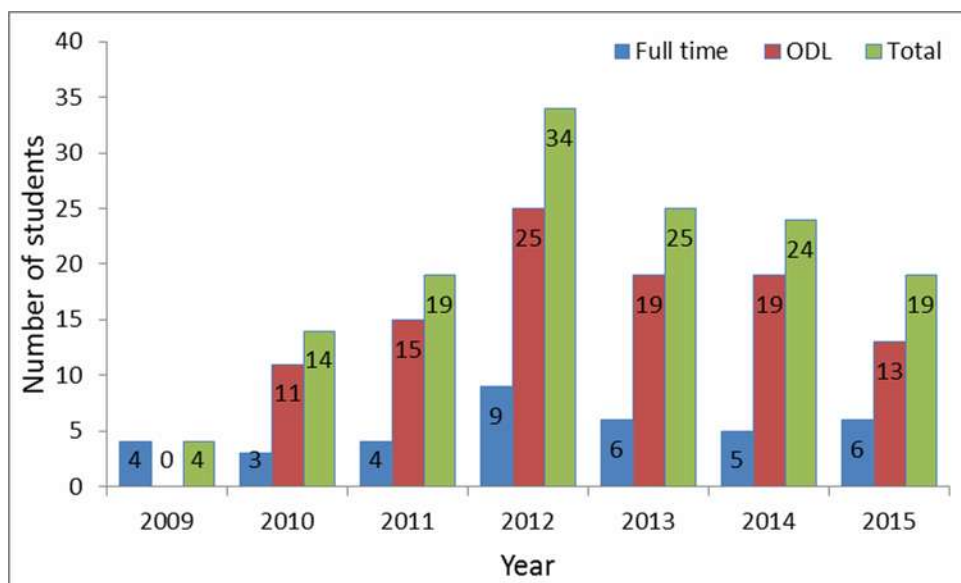


Figure 3. Changes in the number of students admitted to postgraduate Crop Protection programme after introduction of ODL delivery

Conclusions and wayforward

Despite the attendant challenges, the Crop Protection ODL programme has opened up training opportunities for professionals in the field of agriculture. Many are able to advance their careers and climb up the professional ladder after attaining their Degrees. The quality of graduates from the ODL programme has been proven. The performance in the end of semester examinations has been comparable to, and in some cases better than, the full time students. There cases of highly motivated learners who completed the Degree programme within the stipulated two year duration. The new frontier is to convert the postgraduate programmes to full e-delivery since internet connectivity has improved in many parts of the country. This will expand access to the training to many more agricultural professional within the country and in the region.

References

- Awolalu, T. (2010). Paper Presented at the Orientation Materials For Newly Appointed Study Centre Managers. Lagos: National Open University of Nigeria. pp. 154.
- Felix Gbenoba, Felix and Opeyemi Dahunsi, Opeyemi. 2014. Instructional Materials Development in ODL: Achievements, Prospects and Challenges. *Journal of Educational and Social Research* 4(7): 138-143
- Idowu BiaoIdowu Biao, Idowu BiaoIdowu. 2012. Open and Distance Learning: Achievements and Challenges in a Developing Sub-Educational Sector in Africa. <http://dx.doi.org/10.5772/48080><http://dx.doi.org/10.5772/48080>
- Onyemaechi Joseph Onwe, Onyemaechi Joseph. 2013. Practice of Open and Distance Learning Models in the Sub-Saharan African Countries: A Literature Survey. *American International Journal of Contemporary Research* 3(8): 122-135
- Otto, Peters Concepts and Models of Open and Distance Learning. <http://www.c3l.uni-oldenburg.de/cde/found/peter98b.htm>
- Raniah Samir Adham, Raniah Samir and Karsten Oster Lundqvist, Karsten Oster. 2015. MOOCs as a Method of Distance Education in the Arab World – A Review Paper. *European Journal of Open, Distance and e-Learning*, 18(1): 123-139.
- Simon Midgley, Simon. <http://www.thecompleteuniversityguide.co.uk/distance-learning/advantages-and-disadvantages-%E2%80%93-why-choose-distance-learning/>
- Tharindu R. Liyanagunawardena, Karsten O. Lundqvist, Shirley A. Williams. 2015. Massive open online courses and economic sustainability. *European Journal of Open, Distance and e-Learning*, 18(2): 95-112.
- Tony Bates, Tony. 2008. Open learning and Distance learning Resources. <http://www.tonybates.ca/2008/07/07/what-is-distance-education/>
- United Nations Educational, Scientific and Cultural organization (UNESCO), 2002. Open and distance learning: trends, policy and strategy considerations