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Model for Blended Supervision of Post-Graduate Students

Mildred Atieno Ayere

Additional information is available at the end of the chapter

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Abstract

Supervision of eLearning students at Maseno University poses a great challenge to the normal institutional order because most senior lecturers qualified for postgraduate supervision are technologically illiterate, semi-literate, or challenged [10]. The recommended lecturer to student ratio for postgraduate supervision in Maseno University is 1:5 and 1:3 for master's and PhD students, respectively, but the actual ratio is 1:12 [23]. The challenge of high student numbers in three different campuses, low numbers of qualified supervisors; and fully online students is a big problem. ELearning is not new to the developed world but a fairly new concept in Africa [2, 6, 7]. Through eLearning, Maseno is fulfilling the global demand for universal lifelong learning [26]. Introducing blended supervision was a strategy seeking to harness the opportunities in the online platform by reducing distance between students while increasing the rate and quality of feedback [8, 21, 31]; leveraging the affordances of virtual learning to create an interactive environment for learners and faculty [11, 18, 15]. Objectives of this project were to develop policy and procedures for online supervision, Identify postgraduate supervision milestones, and Build a collaborative research environment. The study used the critical case study design [28] and was hinged on constructivist theory [15]. The population consisted of 513 students, 42 lecturers from the 5 schools with postgraduate courses at eCampus, and 8 university administrators. Purposive sampling led to 149 students, 11 lecturers, and 3 administrators from one school that fully embraced the model. Data were collected using online discussions, observations, and interviews. Data were analyzed using time series analysis to identify milestones in the supervision process while predicting best interaction models for online supervision. Regression logic model further helped predict expected completion rates based on existing supervisor to student ratios. The study identified key supervision milestones as assistance in drafting an acceptable concept paper and proposal, quality interaction and feedback from supervisor, provision of adequate tools to support research processes, identification with a collaborative research team, and exposure to research seminars and presentations. From the milestones, the study school identified a group of qualified supervisors and offered them training on use of the online platform and resources in supervision. This study concluded that a pilot model for blended postgraduate supervision is in its formative stages, the collaborative postgraduate research course area is being piloted in six schools, online supervision has enabled most schools to

share supervisors with other research institutions at no extra cost, predicted completion rate for postgraduate research is one year on the blended model, and research outputs from post-graduate students have increased by 50% on average. It is recommended that results from this study need to be replicated in other schools before it can fully inform university wide policy, making it a continuing work in progress.

Keywords: eLearning, online supervision, eCampus, postgraduate research, blended supervision



1. Introduction

1.1. The eCampus of Maseno

The eLearning Centre of Maseno University was established in the year 2007 to spearhead the development of institutional policies and strategies for promoting innovative use of Information and Communications Technologies (ICTs) to benefit learning, teaching, and research activities at the university [10]. In January 2012, it evolved into an eCampus and continued to support academic staff empowerment in modern communication and collaborative learning techniques, to enable them to contribute significantly to quality learning experiences among learners at the university, regardless of their physical location.

The eCampus of Maseno University, therefore, is one of the greatest innovations by Maseno University to facilitate online delivery of high-quality certificate, diploma, and degree programs to learners in various parts of the country, the East African region, and beyond. Maseno University has indeed successfully pioneered the use of modern technology to not only to realize equitable access to higher education through eLearning, but also to improve the quality of educational experience for its face to face learners [18]. The eCampus, which was previously known as the eLearning Centre, has been defined as such in the Maseno University Statutes 2012.

It admitted its first online learners in September, 2011. These were 160 students (102 undergraduates and 58 postgraduates) spread across five university programs housed in three different schools. This number has since increased to 892 students admitted in 15 different programs across six schools within the university. Out of these, there are 366 undergraduate and 526 postgraduate students, a pointer to the popularity of the programs by postgraduate learners. Actually, the number of postgraduate students in the online platform is half the total number of postgraduate students in the whole university, making them very significant to the university research fraternity.

1.2. Background to the problem

Postgraduate supervision of eLearning (fully online) students at Maseno University poses a very great challenge to the normal institutional order because there is no policy or guidelines catering for online supervision. At the same time, most senior lecturers who take part in postgraduate supervision are technologically illiterate, semi-literate, or challenged [10]. The

lecturers were already having problems with high numbers of postgraduate students being supervised, which increases significantly when eLearning students are added. It means therefore that there is need to use blended supervision as opposed to the old mode (Face to face). This requires a new policy and procedures for supervision to cater for this unique need, capacity building for lecturers, and a medium to facilitate the new mode [4, 9, 7, 16]. This change is the content of this chapter.

The recommended lecturer to student ratio for postgraduate supervision in Maseno University is 1: 5 and 1:3 for master's and PhD students, respectively [23]. The average ratio of lecturer to postgraduate student supervision is 1:25 for most schools [24]. This challenge of high student numbers, high workload, and low numbers of qualified supervisors needs an immediate solution given this novel mode of learning introduced by eLearning [13]. eLearning has created a chance for a large yet busy group of working learners to go back to class from the comforts of their "homes" and "offices" [7]. By adopting this mode of learning, Maseno University is fulfilling a global demand for lifelong learning [27]. Despite the successful delivery of fully online instruction, the university is yet to formulate policy to institutionalize blended supervision [29]. Therefore, this project is an intervention to help the university come up with policy and procedures that would mainstream blended supervision in its institutional structures.

The eCampus has so far attracted international students from Iraq, Uganda, Tanzania, Somalia, Rwanda, Nigeria, and Belgium: a fact that has brought an international feel to the university. The greatest challenge with admitting international students is the examinations, which is done face to face [25]. This has denied many learners a chance to enroll because of costs associated with the travel for face to face examinations. For postgraduate supervision, the challenge is much greater given that an eLearning postgraduate student would have to travel back and forth for supervision, which adds to not only the cost but also the time constraints [7, 9, 16]. There is therefore an urgent need to develop an intervening strategy (blended supervision) to deal with supervision of purely online students, high number of postgraduate students, and lack of an online interaction interface for the postgraduate students [30]. The need is further compounded by the fact the university has three face to face campuses (approximately 150km apart), manned by the same pool of lecturers who teach and supervise postgraduate students. An interactive online supervision platform, when created, would create a pool of researchers (postgraduate students and supervisors), who could be resident in any of the campuses. This idea capitalizes on the affordances of a virtual learning environment through the eCampus LMS to build a collaborative learning environment for postgraduate research students to interact with faculty and peers to share, support, encourage, and learn from each other [1, 3, 7, 9]. The LMS has the advantage of not only closing physical space and bringing everyone closer through the new ICTs but also keeping a record of activities [5].

2. Research section

This section explains how the project was undertaken as a research venture. The aim was to find a solution with a research backing, hence the scientific approach to the project. It was to be done in phases, and this section reports the research undertaken in phase one 1 of the project.

2.1. Statement of the problem

The problem that needed urgent attention at the eCampus of Maseno University was the fact that it had embarked on an innovative mode of learning which attracted a high number of postgraduate students (526 in 3 years). The ideal would have been to have these fully online students supported by supervisors through the same platform (LMS). At the same time there was no institutional structure (policy, structured platform, capacity building for supervisors) for the kind of support needed. Compounding the problem was the need to manage high numbers of postgraduate students ready for supervision against a limited human resource. Online supervision was seen as way of mitigating against the problem because it would provide a platform for team supervision and peer education in the course of the research process.

In summary, this project hopes to harness the opportunities in the online platform through a tried and tested LMS to institutionalize blended supervision as a way of managing the postgraduate research process. This would enable the university to reduce the distance between a postgraduate student and supervisor thus increasing the rate and quality of feedback, leveraging the affordances of virtual learning to create an interactive environment for learners and faculty, and in the process, developing institutionally accepted procedures for online supervision out of which a policy on online supervision could be developed.

2.2. Purpose and objectives of the project

The purpose of this study was to develop a model for blended postgraduate supervision for fully online students at the eCampus of Maseno University. In particular, it was set to:

- i. Identify ways of managing postgraduate supervision milestones in the online platform
- ii. Develop policy and procedures for blended supervision of postgraduate students
- iii. Build a collaborative learning environment for postgraduate students and their supervisors

2.3. Research questions

The research questions that would need to be answered in the course of this research include the following:

- i. How should supervision milestones be managed in the online platform at Maseno University?
- ii. What policy and procedures should guide the online postgraduate supervision at Maseno University?
- iii. How can the university build a collaborative learning environment for postgraduate research students and their supervisors?

2.4. Significance of the project

The results from this project may influence the mode and quality of postgraduate supervision at Maseno University and possibly other public universities in Kenya. It may introduce capacity building for supervisors as an in-built component in the online supervision course area, which would have an impact in the quality of research outputs. Supervisors and students would also benefit greatly from a reduced workload brought about by mutual sharing and interactivity on the online platform. It also has a global contribution to the supervision process in introducing mentorship of new supervisors by experienced supervisors. The envisaged interaction model and outcome is represented in the figure that follows.

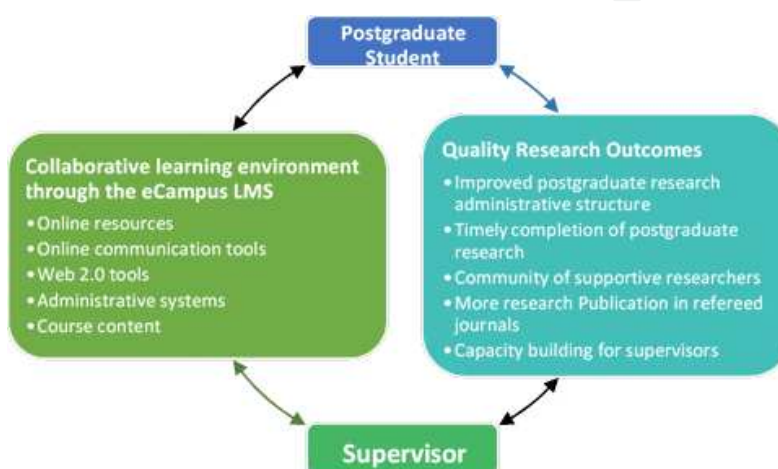


Figure 1. Post Graduate Students' Interactions

2.5. Research methodology

The project used the critical case study design to show-case the Maseno University eCampus operations. The case study design was chosen *"Because of its strength as an applied field where processes, problems, and programs can be examined to bring about understanding that in turn can affect and perhaps even improve practice. Case study has proven particularly useful for studying educational innovations, evaluating programs, and informing policy"* [17].

The population consisted of 526 students, 42 lecturers from the 5 schools with postgraduate courses at eCampus, and 8 university administrators. Purposive sampling was used to select 165 students, 11 lecturers, and 3 administrators from one school that fully embraced the blended supervision model in its formative state. Data were collected using online discussions, observations, and interviews. The collected data were analyzed using time series analysis to identify milestones in the supervision process while predicting best interaction models for online supervision. Regression logit model further helped predict expected completion rates based on existing supervisor to student ratios.

A team of four supervisors who formed the project secretariat designed a supervision course area and piloted it by working with one supervisor from each school who supervised at least

two students purposively selected. A team of administrators representing school of graduate studies, the eCampus, school coordinators, and technical team leaders were to brainstorm and harmonize policy and procedures for online supervision of postgraduate research at Maseno University. The project secretariat were to use the final protocol developed to train supervisors towards building a collaborative learning environment for postgraduate research students and their supervisors at Maseno University.

During piloting, data were collected and used to make adjustments in the protocols. Policy documents were then discussed, reviewed, and consultations will be made to determine the extent to which they support implementation of the protocol and areas that need to be harmonized. A validation workshop was held with relevant stakeholders before preparing a final report containing the revised supervision protocol and the necessary policy revision for implementation.

2.6. Project plan

The following activities (see figure below) will be undertaken in a bid to operationalize the project with the help of a research secretariat composed of four researchers. Each associate researcher will be in charge of two schools having postgraduate studies at the eCampus. Besides overseeing the school activities, they will also assist with specialized areas like creating the collaborative platform, training of supervisors, and engaging with university management. The actual project plan will be carried out in the steps set out in the figure that follows:

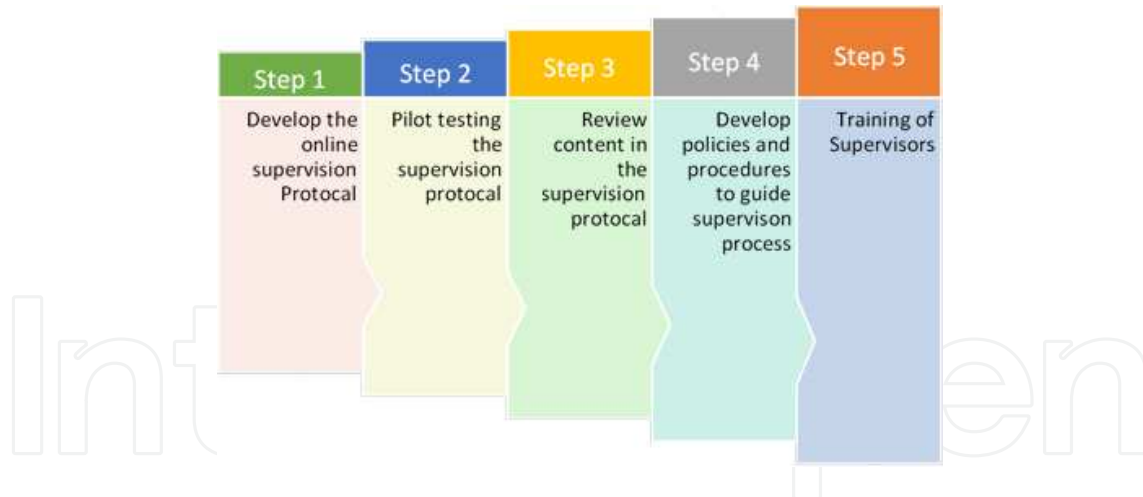


Figure 2. projected Project Plan

2.7. Expected outcomes

It is expected that at the completion of this project, Maseno University would have developed a policy for blended post graduate supervision; at least 50% (Based on the number of schools offering courses online) of the lecturers undertaking post graduate supervision would have been trained to undertake online supervision of postgraduate students. A reviewed supervision policy for online supervision of postgraduate students will be available for use by all

postgraduate students at the university, thus improving completion rates because of the community of researchers available to the student researchers. At the same time, the eCampus will have grown the capacity to mentor other universities. This may involve training and knowledge transfer. Lastly, the project will nurture postgraduate students to publish more in refereed journals.

3. Results and conclusion

This section reports the results from the project so far and makes conclusions that were possible at the end of phase 1 of this project. The reported results are mainly from the one school that had already embraced the online supervision model as it was in its formative stage and was using the course area created by the project team.

3.1. Results

It should be noted that the project being reported is a work in progress and will take time to complete. The results reported here refer to what has been achieved so far. The project objectives had been set as follows:

- i. Identifying ways of managing postgraduate supervision milestones in the online platform
- ii. Developing a policy and procedures for online supervision of postgraduate research
- iii. Building a collaborative learning environment for postgraduate research students and their supervisors

The results being reported in this book therefore are what has been achieved so far as the project continues on.

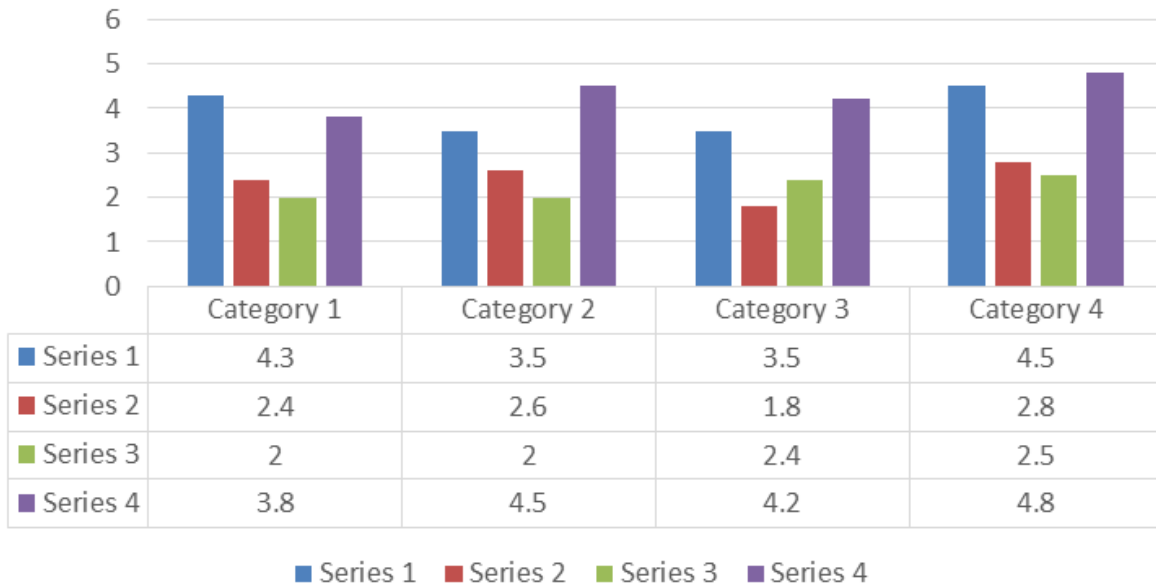
3.1.1. *Managing the supervision milestones*

The analysis of data collected was done through a time series analysis on trends of supervision milestones [12], which gave provided the results presented using the graph that follows in terms of postgraduate supervision in research. To arrive at the four key issues analyzed for trends, online interviews were done to help arrive at possible areas of need for the students.

The trends were analyzed from data collected from students in four successive semesters (Categories 1 to 4) through a five-scale rated discussion and questionnaire. The responses were rated with respect to assistance given to students in drafting concept paper and proposal (series 1), provision of tools to support the research process (series 2), identifying with a research team (series 3), and exposure to seminars and presentations (series 4).

It is apparent from the trends that the main supervision milestones given in order of preference were as follows: exposure to research seminars and presentations (4.325), giving students' assistance in drafting an acceptable concept paper and proposal (3.95), provision of adequate

Trends in Supervision Milestones



tools to support the research process (2.4), and identifying with a collaborative research team (2.225).

The milestones are further discussed below in order of preference from the research outcomes:

- i. Giving students assistance in drafting an acceptable concept paper and proposal. This is mainly because the research area has interactive and self-directing instructions together with resources that allow learners to discuss and learn from each other.
- ii. Provision of adequate tools to support the research process. This is because the main tool used in the postgraduate research area is an LMS used at the eCampus, which is supported by Moodle. Therefore, all the interactive tools in-built in the Moodle and web2 tools supported by Moodle are available for online supervision. Moodle has innumerable communication, learning, and interactive tools.
- iii. Identifying with a collaborative research team. From the questionnaire, it was reported by all the students surveyed that most postgraduate students are isolated and lonely. Looking closely at the issues raised by the students, it is apparent that all these issues would be adequately dealt with by having a chance to interact with peers and supervisors.
- iv. Exposure to research seminars and presentations. All schools involved in this project resorted to holding seminars and presentations during the face to face meeting held once a term by the eCampus. This practice brought about learning in the process of presentations. Students ask questions which are tackled jointly by all faculty members present.

3.1.2. Building a collaborative learning environment

The table below gives a list of issues raised by postgraduate students after their course work

Issues facing postgraduate students after course work	Percentage number of students affected
Problems on access to adequate resources	80
Uncertainty as a learner progresses in different stages of research work	85
Inadequate role models	70
Delayed feedback on work submitted	90
Procrastination on tasks	80

Looking closely at the issues raised by the students, it is apparent that all the issues would be adequately dealt with by having a chance to interact with peers and supervisors.

This researcher used a novel method for converting educational log data collected by observing learner interactions in the course into features suitable for building predictive models of student success as reported by [26]. They further acknowledge that unlike cognitive modeling or content analysis approaches, these models are built from interactions between learners and resources, an approach that requires no input from instructional or domain experts and can be applied across courses or learning environments. It is from the results of these analyses that a model of interaction was suggested for the eCampus. The model is presented in the diagram that follows.

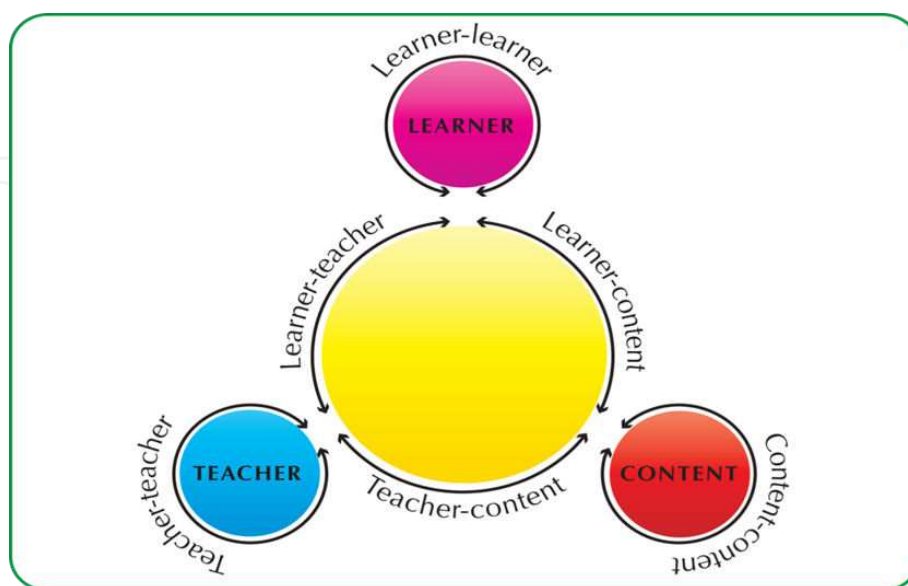


Figure 3. Post Graduate Students' Interactions

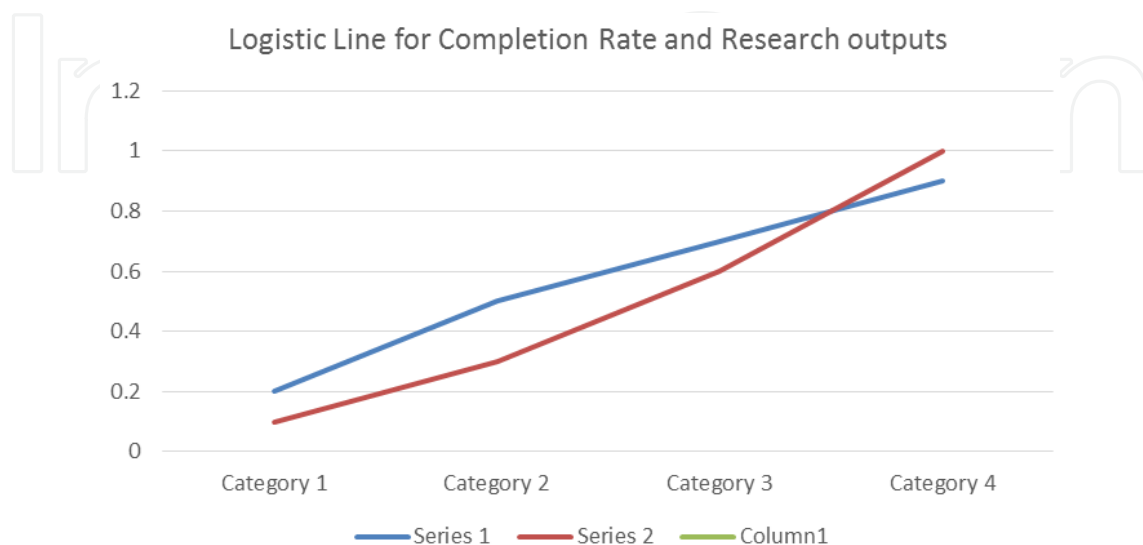
Quality interaction and feedback from supervisor and peers was one of the emerging practices realized from building a collaborative learning environment. This came about because the course area is open to all postgraduate students and other supervisors; therefore, a supervisor is compelled to ensure the feedback they give is holistic and humane. The interactions identified in the postgraduate research area so far may be symbolized by the diagram that follows.

It is clear from the diagram that the depicted interaction is not only between the student and the supervisor but also between the student and the content as well as among the peers. It results in a win-win situation for all involved as supervisors get to improve their skills by interacting not only with learners but also with content availed in the research area. Students on the other hand get assistance from other supervisors interacting in this common area.

3.1.3. Emerging research outcomes

The qualitative data reviewed from the lecturers taking part in this project resulted in significant outcomes that cannot fully be ignored. These had to do with schools thinking of novel ways of mitigating against the high learner to supervisor ratio. It emerged that the project school had only four qualified lecturers against 85 students needing supervision after completing course work. They took advantage of the existing interactive course area to outsource for supervisors external to the department and the university who needed the experience and could spare time to assist with the supervision tasks.

Furthermore, the logit model was used to predict the learner completion rates and expected research outputs from the postgraduate students. For these predictions to be possible, the outcome (response) variable is binary, i.e., complete or drop out (1 or 0). The predictor variables of interest are as follows: frequency of contact with supervisors, interaction with peers, online tools support provided, and identification with a research team. Categories in the curve refer to semesters when the data are collected. The predictor logistic line is presented below:



The results indicated that a learner is likely to complete research in four semesters, which is just over a year if all the predictor variables are present (series 2). At the same time, the research outputs are likely to increase by slightly more than 50% (series 1). These outputs range from publications to presentations at conferences and seminars to innovative outputs.

3.2. Conclusion

In conclusion, it was noteworthy that the project enabled the university to arrive at the following in its phase 1 of implementation:

- The university through the eCampus was able to conceptualize a blended postgraduate supervision model to be used and was tried out by at least one school with its postgraduate students even though the interaction model is still in its early formative stages.
- The eCampus, through the schools having postgraduate students, managed to set up a collaborative postgraduate research course area, which is still being piloted in six schools.
- Most schools with a high number of students at the eCampus are co-opting supervisors from other research institutions at no extra cost to the university.
- It is predicted that with this model in use, the completion rate for postgraduate research will be just one year using the blended model.
- Research outputs from postgraduate students are expected to increase by 50% on average with more students having the ability to publish in refereed journal and making presentations in conferences and departmental seminars.

With all these initiatives taking place through the eCampus, the final outcome from this project is expected to be a policy document being formulated based on research outcomes to guide blended research processes on blended supervision.

Author details

Mildred Atieno Ayere*

Address all correspondence to: ayeremildred@yahoo.com

eCampus, Maseno University, Kenya

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