

Developing Professional through e-Learning – An Use Case in Sri Lanka

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Abstract—This paper presents authors experience about a completely online B. Sc. Degree program conducted in Sri Lanka at Rajarata University of Sri Lanka. This degree program is offered in two main streams as Physical Sciences and Bio Sciences. Both degrees are three years in duration. Focus for this paper is two modules offered in the second year as a common module for both streams. Modules were conducted during February to May in 2013. Since the complete online nature of the program most of the students joined are employed. Moodle server is used to host all the course materials and assignments. Regular online discussion were carried out in order to answer students questions and to clarify unclear points. Students joined the discussion online from their homes mostly from all over the country. Twelve students were followed these modules and students who did not sit for the final exams were excluded from the statistical calculations.

Keywords-e-learning; moodle; sri lanka; distance learning

I. INTRODUCTION

Sri Lankan education system is mainly consists of public schools and universities which provides free education to all the students in the country as assured by the constitution. Schooling system is consists of 13 years as, 5 years of primary education (grade 1 to 5), 6 years secondary education (grade 6 to 11), and 2 years of tertiary education (grade 12 and 13). At the end of each level there is countrywide common examinations at grade 5, 11 and 13. Examination at grade 13 is called General Certificate Education (G. C. E.) Advanced Level (A/L) and considered as the university entrance qualification examination. In 2013, there were 342,450 new admissions in general education to schools and 24,198 new admissions to university education [1]. 63.04% of students who sat for the G. C. E. (A/L) examinations have qualified for the university admission, but only 16.71% of the qualified students were admitted to public higher education due to available capacity [1].

To facilitate the percentage of the students who are unable to join government universities different opportunities are emerged, as an example technical colleges. In the other hand several government universities are now have started to offer full time or part time degree programs on line or off line for this student segment. Aforementioned online programs are further attracted by student who would like to enter job market early in the carrier and still wish to improve their educational or carrier related qualifications. One major such program in Sri Lanka is the e-bit program offered by the University of Colombo, School of Computing (UCSC) [2]. But still considerable number of students

in some remote areas of the country have no access to afore mentioned popular education facilities due to the distance and language gaps. Hence, RUSL started B. Sc. online degree program in 2009 to fill this gap. Currently there are 60 students enrolled in this program following both Biology and Physical science degrees.

Majority of Sri Lankan school leavers and graduates move in to professional job market after completion of their studies rather continuing in academic or research and development paths. But still skill development of such individuals is necessary to achieve better performance in their respective fields and to increase their quality of life. Many professionals in the world are supported with such continuous skill development programs after their structured studies at collage or universities. In an effort to fulfil that gap for Sri Lankan professionals we present an e-learning experience carried out at Rajarata University of Sri Lanka documenting the procedural details, experience and findings gained through two modules which were conducted completely online as part of an online bachelor degree from 2009 to date. Main purpose of this study was to share the experience with other interested parties and specially to find out methods to further improve the quality of the experience of the students.

Rest of the paper is organized in 5 sections. Section 2 discusses related works in education and e-learning in Sri Lanka. Section 3 presents research method and section 4 explains results of the experiment and discusses the results. Finally section 5 concludes the paper and provides future research directions.

II. RELATED WORK

In 2010 Arachchi *et al.* studied an identification of learning styles and domains within the Sri Lankan community to develop e-learning content to confer the maximum benefit to the end users, where they analyzed about students and their background to find out tendencies in higher education in detail [3]. Andersson in 2008 identified seven major challenges in the following areas with respect to a study carried out in an online environment as, Student support, Flexibility, Teaching and Learning Activities, Access, Academic confidence, Localization and Attitudes [4]. Liyanagunawardena *et al.* in 2011 presented that an online distant learning program conducted in Sri Lanka was less successful than predicted mainly due to the lack of access and quality, hence focus on the quality of the program is very important [5].

III. RESEARCH METHOD

Research was carried out for a completely online B. Sc. Degree program conducted in Rajarata University of Sri Lanka. Students participated in this research are the second batch of the students of this program. Two modules, Image Processing and Analysis (IPaA) and Introduction to Simulation (ItS) which were conducted during January to June 2013 was the main focus of this research. Modules were conducted completely online basis where, course materials including all necessary lecture materials, assignments and quizzes were distributed to participants and collected all submissions through a Moodle based Learning Management System (LMS) server.

Twelve students were participated in this study as shown in Table 1 with their basic details (Names are not displayed here to secure their privacy). Still this full on-line degrees are not popular within the country. Since this is full on-line degree, most of the students are employed somewhere. There are some medical doctors, high school teachers, government workers etc.

Table 1. Details of the participants of the research

No.	Gender	Age	Highest education qualification	G. C. E. (A/L)			Profession	Is it a requirement to follow this degree in your profession?
				Stream	Year	Z score		
1	F	36	AMO	Biology	1996	N/A	Registered medical officer	No
2	F	34	G. C. E. (A/L)	Biology	1997	N/A	Teaching	No
3	F	24	G. C. E. (A/L)	Biology	2009	0.2340	Secretary	Yes
4	M	27	-	-	-	-	-	-
5	F	25	Undergraduate	Biology	2007	1.0179	Teaching	Yes
6	M	29	G. C. E. (A/L)	Biology	2005	0.8458	Teaching	Yes
7	M	23	Undergraduate	Mathematics	2009	0.6064	N/A	No
8	F	24	G. C. E. (A/L)	Mathematics	2008	0.7046	N/A	No
9	F	25	G. C. E. (A/L)	-	-	-	-	-
10	F	26	Undergraduate	Biology	2006	0.0940	Teaching	No
11	F	25	Undergraduate	Mathematics	2006	0.3625	N/A	No
12	F	36	Undergraduate	Biology	1997	N/A	Registered medical officer	Yes

Regular online discussion were carried out based on the student requests through Skype or Google Hangout. Module lecturers join the discussion with the students to discuss the materials and to answer students' questions. Team Viewer was used to conduct sessions to support programming examples, especially Matlab. Twelve number of two hour online discussions were conducted separately for each module. Lecture materials for twelve chapters were uploaded in the Moodle. Students can post their questions in the discussion forums in the Moodle server or can email lecturers.

Three assignments were distributed for each module and students were asked to submit their answers online. For each module first assignment was to read a related research paper and to present online letting them to familiar with the related researches for a particular module. For one module research papers were provided by the lecturer and for the other students were asked to find by themselves. For most of the students this was the first time reading a research paper. Rest of the assignments are normally short answer programming based questions.

IV. RESULTS AND DISCUSSION

Mainly evaluation of the research is twofold. Students' access details of the Moodle LMS was collected and analyzed with their final marks of the modules. Further a questionnaire was carried out to evaluate students' experience of the modules and to collect their suggestions.

Table 2 presents students' total number of hits in the Moodle LMS for both modules with their final marks. Students who did not sit for the final exams were excluded in the statistical calculations. For the module IPaA students 5, 7, 8 and 11 were excluded and for the module ItS students 5, 7, 8, 10 and 11 were excluded. Pearson *r* correlation was used to find any relations between number of hits in the Moodle LMS and final marks of the students. For the module IPaA $r = 0.7197$ and $p = 0.0682$ which states that the number of hits in the Moodle LMS has a very high positive correlation with the final marks but with high *p* value. For the module ItS $r = 0.8856$, $p = 0.0080$ which clearly

demonstrate that there is a very high positive correlation between final marks and the number of hits in the Moodle LMS with less p value.

Table 2. Total number of hits in the Moodle and final marks

No.	No. of hits		Final Marks	
	IPaA	ItS	IPaA	ItS
1	92	237	92	88
2	81	128	77	75
3	78	142	86	78
4	68	179	92	95
5	22	74	-	-
6	20	24	80	53
7	62	119	-	-
8	37	103	-	-
9	17	59	78	58
10	7	4	45	-
11	14	25	-	-
12	8	28	61	68

Students' experience about the two modules were collected using a questionnaire consisted of 28 questions. Out of total 12 students only 10 students answered the questionnaire. Quality of experience of the students regarding online learning in a 5 point Likert scale (1-very good, 5-very poor) is shown in Figure 1. This clearly shows that majority of the students are satisfied with the system and online experience.

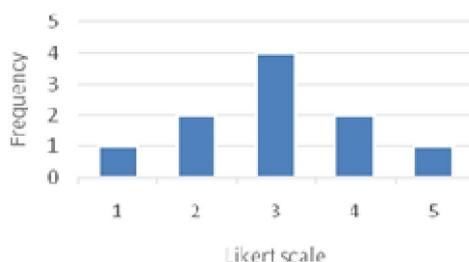


Figure 1. Quality of experience of the users

Further, in response to the question “Specify if you have any other comments/ feedback related to the two modules or LMS” several selected answers are given below.

“We need some more discussions with tutors. We can check our knowledge through MCQ.”

“It is too difficult to understand Simulation and it is an easy way to follow the simulation lesson.”

“Help given to students via the LMS by sharing additional study material is highly appreciable. IPA and ItS are active modules.”

“Should involve arrangements of serial presentations among students”

Several important findings can be concluded here. First, tendency of pursuing higher education online preferred by female students as per Table 1. Wide age range of the students which is 23 to 36 years shows online learning would be a great option for employed to pursue their continuous education. Further it is very interesting to see that six students has mentioned that pursuing higher education is not an requirement of her current employment, so it shows that students prefer higher education not only for their company requirements, but for their personal benefits as well.

Another very important achievement of this e-learning experiment noteworthy is students who are employed at different places are starting to practice this ICT knowledge acquired through the course in their work environments even most of them are not ICT experts or the personal in charge of ICT at their work place. One good example to mention here is the web site created for the Medical officer of health, Dodangoda, Sri Lanka [6].

CONCLUSION

This paper discussed about the finding of a research study conducted in parallel with two modules of a completely online degree program offered in Rajarata University of Sri Lanka. As per the findings of the study it is clear that number of hits in the Moodle LMS positively correlates with the final marks of the students. This states the need of encouraging students to access the lecture materials provided in the Moodle LMS regularly. As per the questionnaire answers it is clear that students are satisfied with the both modules. There are two main limitations of the study as, limited size of the study group and availability of no control group which it is planned to address during future works. Further a complete analysis of the usability of the system is planned to carry out using IBM computer usability satisfaction questionnaire [7]. Further following points can be highlighted as per the authors' experience. Since most of the students are employed this would be a very good opportunity to enhance their required skills using the specialties available in the university. By addressing the difficulties mentioned by the students and further improving the quality of the course and the experience a larger community can be educated. Required expertise can be hired as required if the expertise is not available in house since this is a completely online program. As per the findings it is clear that continuous skill developments of the professionals and suitable ways to achieve that are a requirement of the society. Further, by eliminating the drawbacks and enhancing the mostly requested features of the e-learning system, we can well facilitate the development of the professionals in required domains.

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