DISTANCE, ONLINE AND CAMPUS HIGHER EDUCATION: REFLECTIONS ON LEARNING OUTCOMES

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Abstract

The paper draws on empirical data from Scotland and Sweden. The empirical setting from Scotland builds on an evaluation of online and on-campus study groups with exactly the same module syllabus. The Swedish setting is also based on an evaluation of distance and on-campus study groups with exactly the same module syllabus. The data compiled in both countries arise from performance measures comparing online and on campus study modes, interviews with teachers and Lecturer field notes. The results indicate that students in both countries foremost use the Virtual Learning Environment (VLE) as a forum for accessing information, to access asynchronous postings in the forums and access synchronous online lectures which are also accessed asynchronously in the VLE. The results in the online and campus modes in Scotland and Sweden indicated no significant differences in grades scores. In the paper we will discuss some reasons why study modes do not appear to influence grades.

Introduction

The use of information technology is fast becoming an integrated and normalised part of higher education (Lockwood & Gooley, 2001; Ryan et al., 2000; Sloman, 2001; Stephenson, 2001). During the period between the 1970s until after 2000 conditions in teaching and learning have changed and adapted to both demands from students and from teaching institutions for greater flexibility (Lockwood 2001, p. 1). Teaching students utilising a VLE is becoming the norm for both on campus attendees and online learners (Stephenson, 2001, p. 57). This means that, teaching in higher education appears to be in a constant state of flux, a transformation process where online education is becoming more prevalent for an increasing number of academic disciplines. However despite some studies implying that distance learners are often 'better' students (Means et al., 2009) it is not known if this type of education is cost effective, or if it actually improves the

learning experience for either student or lecturer (McPhee et al., 2009; 2010). In this paper we will investigate how online and campus education impacts on student performance, by which we mean final grades scores. The article draws on empirical data from distance, online and on-campus study groups in Scotland and Sweden with exactly the same module syllabus. The University of the West of Scotland has been offering flexible postgraduate programmes in Alcohol and Drugs Studies online since 1999. Umeå University has been offering distance and flexible courses and programmes since the 1980s in Sweden and in this paper the human resource management study programme will be discussed.

Online vs. Campus Education

As a result of the increased use of technology in education new flexible teaching methods have achieved prominence. Information and communication technology allows communication between students and institutions, regardless of time and space, in education (e.g., Guri-Rosenblit, 2009; Miller & King, 2003). The technology can allow a virtual learning environment to be considered at least comparable to the on campus experience. Students located at different places, regions and countries can become part of a community of learning. This view of the influence of technology today converges with discourses of learning where communication is assumed to be a core factor for learning (Säljö, 2001). It has been suggested that the application of cooperative and collaborative teaching models in online education is related to new technologies that facilitate social interaction (Solimeno et al., 2008).

The predecessor to online education, distance education, has often been seen as the second best alternative to traditional university education (Forsyth et al., 2010). This tension between distance and on-campus modes of teaching and learning has created a debate whether distance or online education is as effective as face-to-face campus education (Gagne & Sheperd, 2001). Face-to-face or traditional campus teaching is considered to be the 'best' option for both student and teacher as rich cues and meanings necessary for effective communication are taken for granted and ever present. The absence of paralinguistic cues in online education which some consider essential for learning to occur means that this is considered to be less effective mode of study (Tolmie & Boyle, 2000). Some studies suggest that personality-based factors that may preclude some people to talk in face-to-face conversations partly disappear with online education which attempts to engage students in online communication (e.g., Stone, 1997; Travers, 2000). The absence of physical proximity can make it easier for less socially confident students to communicate since perceived or actual barriers to face-to-face conversations are absent or minimised in online communications whether synchronous or asynchronous (Tolmie & Boyle, 2000). Travers argues that "The anonymity of participation" makes the medium "more democratic than other social spaces" (Travers, 2000, p. 2). But this anonymity could also potentially contribute to negative educational experiences. Price, Richardson, and Jelfs,

(2010) indicate that online students perceived their online tutoring as less engaging and effective than on-campus students. They conclude in their study that both tutor and student required training to compensate for the lack of face-to-face communication cues online contexts have.

Historically the spread of distance education contributed to the increase in access of part time students in higher education which raised quality assurance issues and a concern with the deterioration of standards in academia. However despite such concerns, many studies conclude that there were no significant differences between campus and distance education concerning learning outcomes. For instance, Russell (1999) reviewed 355 studies on distance education produced between 1928 and 1998. Some of the early studies examined correspondence courses, but most compared instruction over videotape, interactive video, or satellite with on-campus, in-person study programmes. The comparisons were based on test scores, grades, or performance measures unique to the study and on learner satisfaction. The use of the Internet has contributed to a shift from distance to online education which has penetrated into all levels of education. Research focusing online and on campus education in general terms tends to find few significant differences in outcomes and satisfaction ratings between on-campus and off-campus learners (e.g., see Duffy et al., 2002; Edwards et al., 1999; McPhee et al., 2010; Russell, 1999). A study by Kessler (2007) compared 176 students studying online and on-campus also found no significant differences in grade scores between study modes. However in contrast to this consistent finding of 'no significant differences' between study modes Connolly et al. (2005) found that online students performed better than on-campus students in their study. While some meta-analysis studies, principally the analysis by Phipps and Merisotis (1999), concluded there were no significant differences, they did find a significant variation in the outcomes of distance education and face-to-face education. However they also point out that any evaluation research in this area tends to focus on one small part of an entire study programme (Phipps & Merisotis, 1999). Research connected to learning outcomes, for example, Zhao et al. (2005), found that low instructor involvement led to less positive outcomes for distance education but more positive outcomes as instructor involvement increased. Garrison (2009) has suggested that the development of technology positively influences how students and lecturers interact and communicate, which is very different from the independence in the early self-instructional correspondence packages. This change in educational conditions has redefined the role and the duties of the facilitator (cf. Castells (1998) view of how technologies have affected work processes). Recent research of the campus versus online dichotomy made by Tsai (2009) explored college students' conceptions of learning in general terms with their conceptions of web-based learning. The result from the study illustrated that conceptions of web-based learning were more sophisticated and comprised higher order thinking. In line with Hrastinkis and Kellers' (2007) argument that more research is needed on different modes of learning this paper will make a contribution to the research by investigating

distance education, online education and on-campus face-to-face education in relation to student learning outcomes.

Online, Distance and On-campus Education

Study Programme in Alcohol and Drugs Studies: The Results from Scotland

The explicit focus of this longitudinal study (dating originally from 2002) is on student achievement. In this continuing evaluation comparing on-campus and online student grade performance, online study groups have exactly the same module syllabus as their on-campus counterparts. There is equivalence of support in that students on both modes of study are taught in traditional 15-week trimesters, have the same digital learning materials, live interactive lectures using the VLE as a central hub, and the same assessment methods including assignments, projects, and class tests. Most importantly, the online and on-campus modes of study had the same learning outcomes, the same academic module moderator and also the same external examiner to ensure that assessed work by students on each mode of study was graded to the same standard.

Study Programme in Human Resource Management: The Results from Sweden

The study programme in human resource management is a three year long education programme examining personnel, staff and organisational issues. The program is an on-campus programme with VLE support. Three different study groups located at three different places in northern Sweden pursued full time studies together with the on-campus group. The regionalised study group, from now on called the "distance group," access the learning support materials, lectures and seminars online in the VLE. The distance and the on-campus students had the same syllabus and the same tasks and examinations. The VLE was foremost used for course information and course evaluations.

Methods

The findings presented in this paper are based on empirical data from higher education in Scotland and Sweden. The aims, content and assessment demands were held constant in both cases.

Data Collection in Scotland

The objectives of this evaluation were to assess the effects of study mode on student achievement in terms of summative grade for a single module called Understanding Substance Use and Addiction, part of suite of modules that lead to a postgraduate award in Alcohol and Drug Studies at the University of the West of Scotland.

Two modes of study were compared:

- Group 1: on-campus study with access to VLE (full and part time)
- Group 2: online study via VLE (part time only)

Group 1 is supported both online and face to face, widely known as "blended learning" or "integrated learning." Group 2 is supported wholly online with no on-campus or direct face-to-face tutor contact.

Student Support and Equivalency in Scotland

To replicate equivalency as described by Simonson et al. (1999), the VLE Blackboard used with the University of the West of Scotland was deemed an appropriate application as it could be used as a central hub for all students (both on-campus and online) to meet and interact using the asynchronous discussion forms. Online students could also access interactive lectures with their tutor in synchronous live lectures using Nefsis desk top video-conferencing.[1]

All students had the same interactive written support material, posted to them and this was also available in an online format. These written materials include discussion sections that corresponded to the discussion forum activity in the VLE. Within each of the learning units contained in the course materials there were questions which had to be answered before moving on to the next subsection within each unit. A recommended reading list was provided to all students to encourage wider reading and easy access to electronic journals was available via the University library "Athens" system. The resources of the on-campus library were available to all students. These research papers are accessed in either PDF or word file formats which can be printed out in paper or read on computer screen.

All students, no matter the study mode, are expected to access the VLE actively and to engage in synchronous and asynchronous discussions with tutor and other student learners. Debate in the VLE and in the classroom increases their knowledge and critical analysis of research in this highly contested field. All students download, complete and submit all assessments via the VLE. There were two written assessments: one mid-term assessment of 1500 words and one end-of-term assessment of 3500 words. The assessments tested the ability of the postgraduate student to critically analyse, compare contrast and synthesise the broad theoretical frameworks within models explaining addiction. The on-campus students were able to have face-to-face discussion to help them construct an

[1] Nefsis is a web-based technology from 'Wired.' It is a live interactive web broadcast where online students can see and hear the lecture that was delivered on campus in a power point format. This is also saved as a resource for viewing at any time.

adequate assessment. The online students were provided a criterion document to be uploaded to the VLE for discussion, and individual e-mails and telephone conversations attempted to create a comparable substitute for the face-to-face on-campus experience between tutor and student.

Individual tutoring was available on request to any student. Students could contact the tutor via e-mail, telephone or if on campus at lecture / tutorials or simply by calling in to the office. Learning support also made appointments for students with the tutor. All e-mail messages were answered in less than 48 hours except in exceptional circumstances. An overview of the support available to each study group is in Table 1 below.

Table 1: Student Support by Study Mode

Student support and activity by study mode 2007–2010						
	Distance learning interactive materials	on-campus lectures	online tutorials	On-campus teaching materials in VLE	Web chat and discussion boards via VLE	Access to tutor via telephone, e-mail, & VLE
Group 1 On-campus	Yes	Yes	No	Yes	Yes	Yes
Group 2 online	Yes	No	No	Yes	Yes	Yes

A total of 164 on-campus students and 53 distance students that have studied the education programme between autumn 2007 and autumn 2010 (Table 2).

Table 2: Student Numbers on Module* Understanding Substance Use and Addictions

Study mode	2007	2008	2009	2010	Total
On Campus	32	22	31	29	114
Online	31	4	11	7	53
Total	63	26	42	36	167

* These student numbers only include those students who successfully submitted both assessments and passed the module

The on-campus groups studied on campus and had access to the VLE learning support offered to the online cohorts. The online students were based mostly in the UK; however these cohorts included students from England, Bermuda, Eire, Nepal, and Zimbabwe.

Data Collection in Sweden

In this paper two modes of study were compared in Sweden:

- Group 1: On-campus study with access to VLE (full time)
- Group 2: Distance study with access to VLE (full time)

Four modules were used to calculate the final grades score outcomes. Two modules, the first semester of the programme and two modules from the third semester were selected (see Table 3).

Table 3: Selected Course in the Study Programme of Human Resource Development

Courses	2008	2009
Introduction and scientific work, 6 hp	x	
Organisations and human resource management, 4,5 hp	x	
Organizational change, 7,5 hp		x
Leadership, 7,5 hp		x

There were 72 on-campus students and 29 distance students that started the education programme autumn 2008. Out of the 29 distance students, two groups of 11 and 6 students were located in the north of Sweden and one group of 12 students in a city close to the University campus in Umeå.

The fail, pass or A-pass grades scores for each student at the completion of the course were entered into SPSS. Students who failed to complete the course were excluded from the analysis. In order to discover if grade scores were related to study mode Mann Whitney tests were used to test for any significant differences between study groups. One teacher on the programme with long experience teaching online and on campus modules ensured compatibility with the analysis in Scotland.

Student Support and Equivalency in Sweden

To replicate equivalency the software package Moodle used by Umeå University was deemed an appropriate application as it could be used as a central hub for all students (both on campus and distance) to interact using the asynchronous discussion forms, meaning that it was comparable to the VLE used in the Scottish study. The teaching at the programme was supplemented by lectures, seminars and group assignments but also, in specific courses, individual work with guided supervision of a teacher. The regionalised study group, or distance group, accessed the learning support materials, lectures and seminars online in the VLE. A local supervisor was connected to each study place to support the students foremost with practical study related issues. The lectures that were delivered on-campus were streamed out live to the distance groups. All students regardless of study mode could interact with each other and with their tutor. Videoconferences were used in seminars with the distance group, all connected via the VLE, whereas seminars with on-campus students were carried out face to face. One fundamental idea in the programme is to support discussion and reflection in the study groups, not only in the seminar sessions, but also between the scheduled teaching sessions in asynchronous discussion spaces in the VLE. All of the distance and the on-campus students had the same syllabus and the same teachers

and tasks and examinations. While the VLE was a central hub enabling communication between groups and their Lecturer, the VLE was foremost used for accessing course information and course assessments.

Findings

Results from Scotland

Each student's grade score was entered into SPSS. Students who failed to complete the course were excluded from the analysis. In order to discover if grade scores differed significantly between the two groups, independent t-tests were used. Table 4 contains mean and standard deviation scores for each group in each year. A diary kept by the lecturer was used to discuss teaching conditions for on-campus and distance students. An online questionnaire was also analysed, which gave both quantitative and qualitative data on the satisfaction of each student with this module learning experience.

Table 4: Percentage Mean (SD) Student Score by Year and Study Mode

Study mode	2007	2008	2009	2010	Overall
On Campus	63.2 (6.1)	55.2 (7.1)	52.2 (8.4)	54.7 (6.3)	56.5 (8.2)
Online	63.2 (8.1)	57.3 (4)	52.3 (8.5)	53.4 (9.3)	59.2 (9.3)
Total	63.2 (7.1)	55.5 (6.7)	52 (8)	54.4 (6.9)	57.8 (8.6)

The data indicated no significant differences between years by study mode and suggests that academic grades were not influenced by the type of learning environment to which students were exposed (see Table 5). This was true of each year when analyzed individually and of the 4 years overall. These findings imply that the online learning environment, as constructed in this particular case, serves as a suitable, comparable setting for students to learn and achieve grades appropriate to their abilities, when compared to the traditional on-campus supported learning environment. This indicates that using a distance learning model for students does not adversely influence grades scores, and this ongoing evaluation suggests that it is appropriate to continue delivering this module using both on-campus and online delivery methods without any negative impact on student performance.

Table 5: Independent-samples t-test Outcomes

Year	Student Group	Mean grade scores (Std Deviation)	t (df)	p-value*
2007	On Campus	63.2 (6.1)		
	Online	63.2 (8.1)	-.022 (61)	.983
2008	On Campus	55.2 (7.1)		
	Online	57.3 (4)	-.56 (24)	.581
2009	On Campus	52.2 (8.4)		
	Online	52.3 (8.5)	-.018 (40)	.986
2010	On Campus	54.7 (6.3)		
	Online	53.4 (9.3)	.428 (34)	.672
total	On Campus	56.5 (8.2)	-1.9 (165)	.059
	Online	59.2 (9.3)		

* no significant differences between the groups on each of the tests.

Data from Table 6 indicates that at first glance that on campus students achieve more 'A' grades, (a total of 6 for on campus students from 2007–2010) and a total of 4 for the online students), however there are many variables to be accounted for, and study mode may not be the most significant factor in the numbers of students who achieve an 'A' grade. Further analysis will be conducted in this ongoing evaluation.

Table 6: Grade Scores by Year and by Study Mode for One Module

	Grades scores by year and by study mode 2007–2010			
	2007	**2008**	**2009**	**2010**
On campus	37	29	41	39
Fail	5 (13.5 %)	6 (21 %)	11 (27 %)	10 (26 %)
Pass	27 (73 %)	22 (76 %)	30 (73 %)	29 (74 %)
A Pass	5 (13.5 %)	1 (3 %)	0	0
Distance learning	20	6	15	9
Fail	2 (10 %)	2 (33 %)	4 (27 %)	2 (22 %)
Pass	15 (75 %)	4 (67 %)	11 (73 %)	6 (67 %)
A Pass	3 (15 %)	0	0	1 (11 %)

Results from Sweden: The Study Programme of Human Resource Development

The results from the study show that the on-campus students are younger than the distance students. The average age in the on-campus group was 28 while the average age among the distance students was 36. Only 11 students out of 72 were older than 30 years in the on-campus group whereas only 7 students out of 29 distance students were younger than 30.

Table 7 shows that that more distance students failed the first course and around 40% of the students received A- grades. The independent samples Mann Whitney U test show that the distribution of grades is the same for campus and distance in the course (p value 0.321).

Table 7: Grades in the Introduction Human Resource Management Course 6 hp (%)

Grades	Campus n = 72	Distance n = 29
Fail	4.2	17.2
Pass	50	41.4
A-Pass	45.8	41.4
Total	100	100

Table 8 illustrates that that the tendency from the first course accelerates during the second course. There was a difference between campus and distance student grades after their second course the first semester. Around one third of the distance students failed which not the campus students did. The independent samples Mann Whitney U test show that there is a significant difference in the distribution of grades for campus and distance in the course organisation and human resource management course (p value 0.000).

Table 8: Grades in the Organisation and Human Resource Management Course 4,5 hp (%)

Grades	Campus n = 72	Distance n = 29
Fail	8.3	34.5
Pass	55.6	62.1
A-Pass	36.1	3.4
Total	100	100

The third semester of the programme the students read a course in organisational change (7,5 hp). Table 9 below illustrates the grades for campus and distance students.

Table 9: Grades in the Organisational Change Course 7, 5 hp (%)

Grades	Campus n = 52	Distance n = 25
Fail	-	-
Pass	69.2	52
A-Pass	30.8	48
Total	100	100

Table 9 demonstrates that distance students had more A passes than on campus students in the course organisational change the third semester of the programme. However, no significant differences between study modes were found. The independent samples Mann Whitney U test show that the distribution of grades is the same for campus and distance study mode in the course (p value 0.144).

In the Leadership course at the third semester the examination performance is similar for both groups (table 10). The independent samples Mann Whitney U test also show that the distribution of grades is the same for the campus and distance study mode in the course (p value 0.667). One factor gleaned from the diary kept by the Lecturer indicates that proximity the University campus could have been a factor influencing grades scores. For example those students who lived closer to the university accessed on campus student tutorial groups fared better, indicating that 'blended learners (both distance and on campus learning) has a positive impact on grades scores. Further analysis is required in this ongoing evaluation.

Table 10: Grades in the Leadership Course 7,5 hp (%)

Grades	Campus n = 48	Distance n = 24
Fail	-	-
Pass	83.3	79.2
A-Pass	16.7	20.8
Total	100	100

Discussion and Conclusions

Our analysis is based on a small sample of modules. In addition, we are aware that the data collected in each study while comparable are not exactly equivalent in content or style. Equally, our data does not give a general or universally valid picture of distance, online and on-campus education in relation to student achievement. Instead it is a contribution to the debate about whether distance or online education is as effective as face-to-face campus education. Our data does not claim that campus education is a better educational option than distance or online education. There are no differences between the grades or test scores

between campus students with face-to-face education and distance students with electronically (VLE) mediated education.

The distance student cohorts in both countries were on average older and had less experience of studying in higher education as the on campus students, who tended to have been in higher or further education longer, and had studied at a comparable level more recently than the distance cohorts. An evaluation of the online modules in Sweden indicates that the course overall attracted older and more work experienced students (Mårald & Westerberg, 2005). That might be one factor that explains why distance students performed less well than the on campus students in the beginning of their education. After one year of the programme the distance students performed equally on the examinations as the campus students. This study demonstrates that a comparison between different study modes has to consider that students are not a homogeneous group, and that factors other than study mode may be influencing the grades scores. Online education is often considered to be a second best alternative compared to face-to-face education, a view which has romanticised traditional modes of study. Jones suggested that:

> Face-to-face interaction does not necessarily break down boundaries, and to adopt it as an ideal will likewise not necessarily facilitate communication, community building, or understanding among people. (1998, p. 26)

Finally, there are arguments that further research should go beyond comparing traditional on-campus with online learning (Oncu & Cakir, 2011). We agree on that but as long there are unconfirmed assumptions of the superiority of either face-to-face or online education there is still a need for comparisons of different study modes in order to understand the learning conditions surrounding different study modes and its relation to student performance. Future studies will have to include multiple data collection methods, both qualitative and quantitative. It will enable an in-depth inner perspective and a reference point for understanding the dimensions of knowledge learning and student performance in contemporary ICT based higher education.

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