

The Inhibitors and Enablers Affecting the Online Behaviours of online College Students Learning in a Blended Learning Context

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Received: 1 Oct. 2020, Revised: 21 Nov. 2020; Accepted: 19 Dec. 2020.

Published online: 1 Jan. 2021.

Abstract: This paper portrays part of a larger study which explores the new online collaborative learning experiences of a class of thirty-seven college students learning in a blended learning context. The research is a case-study with a multi-method interpretivist approach using observations, unsolicited meetings, VLE tracking system, students' reflective journal, online informal discussions, questionnaires, focus groups and individual interviews. This paper focuses on the experiences of students as described in their own voice. It briefly describes the online journeys and identifies the online challenges faced by these students. Although 86% of the students were familiar with the Internet and computers, six online complex behavior patterns emerged. The findings indicated that the enablers and inhibitors affecting the learners' online behaviours were of a situational, infrastructural and persona-related nature. Situational factors are due to the learner's lifestyle. Infrastructural factors are external factors that are not directly under the control of the learners, whereas the persona-related factors are characteristics of the learners' personalities. This work is of great significance in contexts of novice online learners and of cases where educators shift from traditional face-to-face learning to blended or online learning.

Keywords: E-learning, blended learning, online barriers, online factors, online challenges, online behaviour.

1 Introduction

The study discussed in this paper is part of a larger study which was an inquiry into factors affecting the online learning experiences of A-level chemistry students studying in a blended learning course in a college in Malta and the impact of these experiences on learning identity (Rolé, 2014). The research questions which directed this part of the study were (i) what were the online behaviour patterns of the learners following a blended course? and (ii) what factors influenced online behaviours in a blended learning context? The students in this study experienced an innovative mode of learning which involved changes from traditional face-to-face learning to blended learning and from an individualistic mode of learning to collaborative learning.

Garrison and Vaughan (2008) describe blended learning 'as the thoughtful fusion' of face-to-face and online experiences. The blended learning environment in this research was based on the supplemental model, where the traditional face-to-face meetings are maintained and supplemented with out-of-class online activities via a virtual learning environment (VLE). Teenagers are often described as digitally literate, connected, immediate, experiential and social (Oblinger and Oblinger, 2005). However, several studies e.g., Jefferies et al, 2006; Sweeney et al, 2004 show that in general, college and university students resist the use of technology for study. Studies have shown that the majority of Internet users make use of the Internet to access information and to communicate via social networking and not to participate in content creation activities (Bennett and Maton, 2010).

Several researchers presented models to explain students' resistant behaviours. Garland (1993) modified Rubenson's (1986) model and categorised barriers to online learning into situational, institutional, epistemological and dispositional barriers. Berge and Huang, 2004 categorised the factors into three variables: personal, institutional and circumstantial. Berge and Muilenburg (2005) identified eight influencing factors, which listed in order of priority with the most critical first are - social interactions, administrative and instructor issues, learner motivation, time and support for studies, technical problems, cost and access to the Internet, technical skills, and academic skills.

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2 Methodologies – Practitioner Research

As a practitioner I designed, implemented and conducted a blended learning course with students who were accustomed to traditional face-to-face learning based on an individualistic and ritualised approach (Boaler & Greeno, 2000). The online work which complemented the learning in the face-to-face class covered all nine topics in first year advanced level chemistry syllabus. Most online work was based on a socio-constructive approach to learning and included the use of wikis, discussion fora, glossary and lab simulation tasks, which were accessed from the virtual learning environment (VLE) Moodle 4.1. As a researcher, I designed and implemented a multi-method interpretivistic research inquiry to explore the students' response to the innovative online learning. The main study (Table 1) was carried out during 34 weeks in the academic year 2007-2008, and this was preceded by a four-month exploratory study in the previous year 2006 -2007, with a different cohort of college students.

Table 1 indicates the data generating methods and the period when the research method was employed. A zooming-in approach (Nisbet & Watt, 1984) was used to allow (1) an insight of online collaborative learning as experienced by all the students in the class, and (2) a focus on a resilient group of twelve students. The generated data was stored, coded, categorised several times, reduced and analysed using the qualitative analysis software Nvivo 8. The intense coding and repeated categorisations of the data gave me a deep understanding of the students' experiences of online participation. The findings from the final whole class individual and the in-depth interviews with the resilient students were treated as primary data. This data was triangulated with the other generated data (weeks 1-24) (see Table 1).

Table 1: Data generating methods and the time frame for data collection. (Rol   2014, 2020).

Week	Tool/ Research method	Data
< 1	Questionnaire 1 (Q1): student profile questionnaire	Students' familiarity with technology
1-28	Unsolicited face-to-face chats with students	Students' thoughts on course activities
1-32	Researcher's journal	Observation, reflections and development of ideas.
1-32	Virtual Learning Environment tracking system	Students' access and engagement in the VLE.
1-2	Informal online fora (Ice –breaker activities)	Students' perceptions of online learning and collaborative learning.
5	Student's reflective journal	Reflections on some online activities.
7	Questionnaire 2 (Q2): early stages questionnaire	Students' developed attitude towards course.
8	Two ad-hoc group interviews	Purposeful selection of non-participating students
16	Questionnaire 3 (Q3): Middle Stages questionnaire	Functioning of groups and the students' roles
23-24	Two focus group meetings	Students' perceptions and experiences.
28-34	24 Individual interviews; 12 in-depth interviews	Students' perceptions and experiences.

3 Findings and Discussion

This section is divided in two parts. The first part provides the context for the main findings reported in this paper.

3.1 The challenges for online learning and the online journeys

Data collected from the profile questionnaire (Q1) showed that all 37 students in the class (25 females and 12 males) had a computer and Internet connection at home. Six students indicated a reluctance to use computers for study. All students used e-mail, 86% were Internet users and 80% used social networks. The data also revealed a general increase in engagement in the VLE and in collaborative learning as the course progressed. Analysis of the data revealed that the learners were facing three sequential challenges to become successful online learners, namely, (1) the acceptance of online learning as a learning method, (2) the ability to use the computer, Internet and VLE tools and (3) the ability to be a self-directed learner and to

contribute to online collaborative activities. A diversity in online student behaviour patterns emerged and six student behaviour groups were identified (Figure 1). For easy reference, these were likened to terms selected from music dynamics – Marcato (emphatic), Moderato (moderate speed), Crescendo (becomes louder), Diminuendo (becomes softer), Staccato (detached) and Ritenuto (held back). One enthusiastic student who was an innovator and a knowledge mediator was the only Marcato (Route 1). He participated in all activities and met all three challenges. The Crescendo students (Route 5 & 6, n=12) were the resilient students and late adopters who eventually met all challenges. The Moderato students (Route 4, n=9) participated in small group work but not in whole class discussions. The Diminuendo students (Routes 2 & 3, n=4) were late rejecters of online learning. The Staccato students (Route 7, n=7) participated in few online activities. The Ritenuto students (Route 8, n=4) were early rejecters. The Marcato, Moderato and Crescendo students formed the active online learning community of 22 students in the last term.

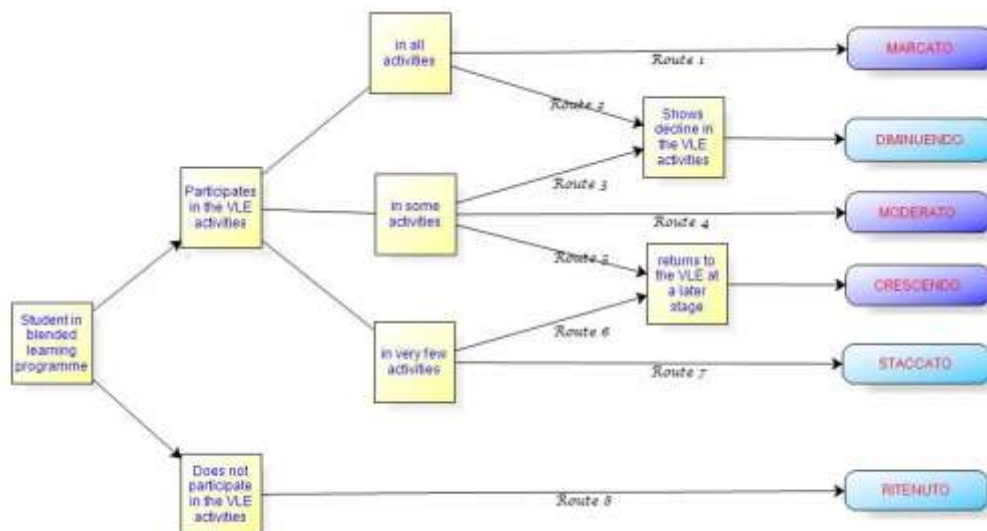


Fig. 1: The online behaviour patterns (Rolé, 2014, 2020).

3.2 The factors (inhibitors and enablers) which influenced the online behaviours

3.2.1 Findings from the data generating methods (Weeks 1 – 24):

The three questionnaires gave a general understanding of the student experiences. The ad-hoc and focus group meetings clarified issues and were instrumental for students to reflect on their experiences. Several issues emerged in the responses in the anonymous middle stages questionnaires and in the focus group meetings. This may be explained by the fact that by this time, there was an increase in the number of students who gained trust and hence showed a willingness to voice their concerns and likes. Analysis of the data emerging from the first 24 weeks in the research was primarily categorized as personal, technological and social issues (Table 2).

Table 2: Issues emerging from data generated up to Week 24. (Rolé, 2014).

Personal Issues	Technological issues	Social issues
Shyness	Unfamiliarity with VLE use	Post work at a late stage
Discouragement: accumulation of incomplete tasks	Computer used frequently by other family members	No communication with others in group
Fear of missing on examinable content	VLE is time consuming	No contribution of work to group
Fear of appearing non-knowledgeable	Fear of using technology	Group conflicts re division of work
Lack of confidence in subject matter	Computer in noisy area at home	Uneasiness to edit work of others
Nothing to add to postings	Time limit on Internet use (costly dial-up system)	Lack of confidence in work of others (*P)

Lack of interest to use the VLE	Time limit on computer use (by parents)	Discussing each other's' work is time consuming
Internet for recreation	<i>VLE is tedious to use</i>	Some members dominate the group
Preference for use of pen and pencil	Outdated computer	Preference for individual work (*P)
Lack of time to use the VLE	Low connectivity	
Keen to give support in whole-class discussion		
Assess their learning		
Learning through observation		
Liked PowerPoint presentations		
Self-confident and self-disciplined		

3.2.2 The class Interviews and 12 In-depth interviews with the resilient Crescendo students (Weeks 28 – 34):

The thirty-six interviews afforded a richer picture of the students' experiences in their own voices. These confirmed, expanded upon and triangulated the initial data. The new rich data necessitated a framework of different categories. I extended Garland's (1993) framework of inhibitors as a model to suit my data of inhibitors and enablers. These factors were categorised in three main themes – situational, infrastructural and persona-related (Figure 3).

Table 3: A framework of the factors affecting online participation (Rolé, 2014).

	Inhibitors and Enablers	
<i>Situational</i>	<i>Infrastructural</i>	<i>Persona-related</i>
Time-management	Institutional	Epistemological beliefs
Online learning/VLE issues	Outside college settings	Personal states
Experiential		Computer use skills
Out-of-class opportunities		Learning dispositions

Situational inhibitors: These were due to the personal choices (Stanford-Bowers, 2008) and unless the students themselves were prepared to change their lifestyle, they could not be able to meet the challenges. This was the case with the Diminuendo (4), Staccato (7) and the Ritenuto (4) students. Five Crescendo students were also affected by situational barriers, but these students were able to overcome their situational problems. These inhibitors included:

(1) Time-management issues: These affected students who were involved in part-time employment, social work, attended extracurricular activities or who missed had personal issues due to illness or familial problems.

(2) Online learning related issues: These affected students who considered online work as unnecessary or as optional or who associated the Internet with leisure and playing games. Three Crescendo and four Staccato students who were familiar with the Internet referred to the VLE interface as 'strange', 'odd', 'complicated' or 'different'.

(3) Experiential issues: These included the past and ongoing negative experiences of collaborative learning, e.g., 'Our group was a disaster, no one started any work. When I tried, I had no response,' Crescendo 1, Focus group.

(4) Out-of-class opportunities: These affected two Ritenuto students who lost interest in learning chemistry in both the face-to-face class and also in the online medium. These students were waiting for an opportunity to attend another course in another institution

Infrastructural inhibitors: These were both institutional barriers and home limitations to the access of computers and the Internet. These factors affected six Crescendo, one Moderato and four Staccato students.

(1) Institutional issues presented constraints beyond the control of the learner. Technology such as computers and wireless local area networks were unavailable in the classroom. Students did not find time to visit the college's IT department due to heavy lecture time-tables and unavailability of the labs at several periods. .

(2) Outside college settings refer to home limitations such as poor Internet connectivity, outdated computers, time-restricted Internet connections, computer failures and restricted use of computers at home. Two Staccato students complained of non-ideal working spaces at home due to the computer being used by other family members and placed in noisy common areas.

Persona-related factors: These are factors which were somehow under the control of the student.

(1) The students' epistemological beliefs regarding self-directed learning and collaborative learning

Data analysis revealed that several students started the online course with an understanding of acquiring knowledge, rather than individually or collaboratively constructing it. The data generated from the interviews confirmed that the two predominating epistemological beliefs were (1) learning occurs when knowledge is transferred from the teacher to students (n=19), and (2) collaborative learning is not as effective and efficient for learning (n=14).

'In Moodle there are students with different styles of expressing themselves. I am afraid I get confused. I would want to have one set of good notes from the teacher and use them to pass my exams,' Crescendo 2, in-depth interviews.

'I preferred to present my own work and get marks for my own effort. I feared that in the group I had to settle for some of the work which was not good enough,' Crescendo 3, in-depth interviews.

(2) Personal states: These included cyber phobia, shyness and a lack of self-confidence in contributing to class discussions.

'I am too embarrassed to take part. The questions they ask make me feel like I live in the moon because I don't understand them, so I feel useless because I cannot help them either. I am very shy. It is embarrassing,'

Crescendo 4, individual interviews.

(3) Online reflective and writing skills: Some students experienced an inability to reflect on tasks and write when using a computer. Some others found it difficult and tedious to write chemistry text with the keyboard.

(4) Online learning dispositions: Learning dispositions are described by Claxton and Carr (2004) as the readiness and the willingness to learn. The data analysis revealed that the Marcato, Crescendo and Moderato students had these four key online learning dispositions: resourcefulness, resilience, reciprocity and responsibility (Rolé, 2014, 2020), which were developed.

Resourcefulness: The disposition of resourcefulness focuses on the cognitive aspects of learning and was indicated by (i) a curiosity about online learning and an academic curiosity, (ii) a confidence in the new learning design, in the teacher and in them self as a learner, and (iii) a flexibility in the appropriate use of different resources. The learning disposition of resourcefulness is essential for traditional students to become self-directed and collaborative learners. The students who were knowledge mediators in the active learning community, had this disposition.

Resilience: This disposition focuses on the emotional aspects of learning and was exhibited by the active learners both at the macro level, in terms of using online learning as a learning method and also at the micro level, where online learners persisted to solve chemistry problems. The twelve Crescendo students had a disposition to be resilient and despite the inhibiting factors which caused setbacks and frustrations (Juutinen and Saariluoma, 2010), they persisted and eventually met all the online challenges.

Reciprocity: This disposition focuses on the social dimension of learning and promotes student learning through active engagement and a socio-constructive approach to learning. Students, who lacked this disposition, were unable to cope with the third challenge. Successful online participation of the 22 students who formed an online learning community depended on the possession of this disposition or its development through observation and imitation (Duncan, Jones and Carr, 2008)

Responsibility: This disposition, which focusses on the moral aspect of learning, was shown when a student took responsibility for one's own learning and when a student took responsibility for the learning of others. In the first case, this disposition was crucial for learners to become self-directed learners and develop self-regulatory and resource management skills. In the second case, the disposition was crucial for collaboration and community formation. Palloff and Pratt (2003) remarked on the robustness, breadth and richness of the disposition of responsibility. They stated that students who take the opportunities to become responsible learners are empowered to move to other learning experiences with an even greater sense of responsibility and accomplishment. This was shown by some of the students when they became responsible students supporting each other's learning also in the face-to-face environment.

'I see what problems other students have. I was not always able to solve problems, but I used to do some research, so that first I understand the concepts well and then I help the others; and I could tell how well I knew the topic myself,' Marcato, individual interviews.

4 Conclusions

This study looked at the barriers and enablers of online learning. Situational inhibitors can be overcome if the students change their lifestyle. The infrastructural factors are not directly under the control of the learners and the persona-related factors are characteristics of the students. The Crescendo students showed that negative factors such as epistemological beliefs associated with traditional learning can change. The learning dispositions of resourcefulness, resilience, reciprocity and responsibility are the dispositional pillars of online collaborative participation. Online learning dispositions can be developed through observation and imitation. The positive factors discussed in this paper were the forces which produced an active online learning community composed of help seekers and knowledge mediators. A shift in student roles from passive learners to help-seekers to knowledge mediators became evident as the course progressed.

Implications for practice

This research has produced a framework of student online behaviours and a framework of factors which affect online participation. These frameworks are of great use as analytical or diagnostic tools for teachers conducting blended learning courses. Teachers engaged in blended learning will be able to understand and use the above framework (Figure 3) to be aware of and to be prepared for various online student behaviours. For example, the Crescendo students did not immediately engage with online participation. Thus teachers will be ready to support such students, by creating the right conditions for their learning. The framework displaying the factors affecting online participation is useful as both an analytical tool to help teachers understand the various factors which inhibit or enable online participation, and also as a diagnostic tool which can be used to support students. For example, infrastructural factors which inhibit participation need to be addressed at an early stage of the course. This research has shown that although some students confirmed that they had Internet access at home, in reality they were unable to work online due to connectivity or computer availability problems. The tool enables the teacher to be prepared to counteract the barriers to online learning. The teachers can then consider ways of motivating and encouraging student participation. For example, one barrier to online participation, which teachers might not expect to find, is the unwillingness of active Internet users to use technology for study purposes.

This work is of great significance in situations such as the Covid-19 pandemic period, where several educators have switched to online learning and even more so in post Covid-19 pandemic period, where as currently predicted, there will be a large shift in learning from the traditional face-to-face to blended learning.

Acknowledgment

This study is part of a research undertaken for my doctorate thesis (Rol   2014). I would like to thank my supervisor Professor Gordon Joyes for his invaluable guidance during my PhD journey. School of Education, University of Nottingham, March 2014.

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