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Publication Date	2018-03-05
Publisher	International Academy of Technology, Education and Development (IATED)

# SUPPORTING ONLINE STUDENTS THROUGH THE LIMINAL SPACE FROM FACILITATED ONLINE MODULES TO SELF-STARTING A THESIS

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## **Abstract**

Most third-level institutes now offer online education [1] with Allen et al. reporting that in excess of 28% of all American higher education students are enrolled on at least one online course [2]. Online education offers flexibility, convenience, and benefits that particularly suit the adult learner wishing to study part-time while continuing to work and deal with other life commitments. This flexibility and convenience associated with online education has a drawback as non-completion rates are typically higher than in on-campus education [3] [1] [4]. However, research has shown that online students have outperformed their traditional student counterparts [5] [6] [7]. Maki & Maki (in Dixson, 2010) contend that in order for this to happen, a strong instructor presence is required along with strong instructor-student communications [7].

Launched in 2004, the online Masters in Software Information Systems (a joint collaboration between the National University of Ireland, Galway and Regis University, Colorado) has seen strong enrolment and retention figures. The Masters programme operates in a part-time mode and the typical student is working while they take the online-content.

Analysis of student feedback has shown that one crux-point for student dis-engagement is the strain a student encounters when writing their thesis [8]. In particular, feedback shows that students struggle when transitioning from facilitated online modules to self-starting their thesis literature [8].

In this paper the authors present data, from the academic years 2013-14, 2014-15, 2015-16 and 2016-17, showing the percentage of students starting thesis-research and those successfully completing a thesis each year. It also discusses the implementation of a roadmap of student-engagement in the mastery of identified related threshold concepts.

**Note:** Anecdotal commentary from the students is presented in [].

**Keywords:** Online learning, liminal space, locus of control, threshold concepts, writing a thesis when studying online, engagement, retention, student support.

## **1 M. SC. IN SOFTWARE ENGINEERING & DATABASE TECHNOLOGIES**

Established in 2003 and launched in 2004, the online Masters in Software Engineering and Database Technologies was a joint collaboration between the National University of Ireland, Galway, in partnership with Regis University, Denver, Colorado (USA). Under this joint collaboration, each university focused on their academic strengths and expertise to develop content related to their subject area specialty. Following an agreed instructional design process and ensuring that the curriculum was grounded in real life contexts, NUI Galway developed and validated the Software Engineering modules whilst Regis University developed and validated the Database modules. Each university took responsibility for the delivery of their associated modules. This new Master programme, initially entitled the M.Sc. in Software Information Systems, delivered a 50/50 mix of Software Engineering and Database modules. Each University looked after the delivery of their own thesis-related content. In 2009, the M.Sc. in Software Information Systems was re-named the Masters in Software Engineering and Database Technologies (M.Sc.SED), to more accurately reflect the content and learning outcomes. This Masters program

remains the flagship online program for the Adult Education Department in NUI, Galway. With academic and instructional-design experts involved in the content-development (validated by industry), the goal of the online M.Sc.SED program is to provide students with the professional skills, conceptual frameworks and technology-experience necessary for a career in the Information Technology (IT) industry. The program aims to provide students with hands-on experience of software development and database manipulation.

## 2 THE LIMINAL SPACE AND THRESHOLD CONCEPTS

In anthropology, liminality (from the Latin 'limina', meaning 'threshold') refers to the ambiguity or confusion that can arise during a period of transition. Whilst in the liminal stage, the participant is transitioning from a previous state to a new state [9]. Van Gennep classified three phases in rites of passage through this liminal space i.e. "(1) separation, when the individual or the group is distanced from their former identities; (2) liminality, the phase in between two conditions (the one from which the individual/group departs and the one which they will enter); and (3) re-aggregation (or incorporation), the final stage in which the individual/group is readmitted to society as bearer of new status" [10]. Liminality describes "the transition experiences involved in the process of separating from one (the old) state of being and incorporating into another (the new)" – a particularly useful concept dealing with learning processes during transition periods and dealing with learning boundaries [11]. A liminal space can thus be seen as a "space of transformation" where "the transition from an earlier understanding (or practice) to that which is required is effected" [12]. It is in effect the space through which the student must traverse in order to master a threshold concept.

The "threshold concepts" view of learning and education design "draws extensively on the notion of troublesomeness in a 'liminal' space of learning" [12]. Åkerlind et al. [13] explains "threshold concepts" as "key disciplinary concepts that are inherently troublesome, transformative and integrative in nature". A threshold concept is one "which is critical for a learner's further understanding" [14]. Land et al. [12] postulate that some concepts, once understood, can "act in the manner of a portal" to provide a new viewpoint for the learner. These "portals" are described by Meyer and Land [15] as "transformative (occasioning a significant shift in the perception of a subject), integrative (requiring the integration of a new understanding or way of thinking and practising) and usually irreversible (unlikely to be forgotten, or unlearned only through considerable effort)" with the threshold concept described as "troublesome knowledge" [16].

While in this liminal state, students are often prone to becoming 'stuck' [17] [18] [19]. Eckerdal, et al. [19] contend that confidence is very closely tied to the liminal space, such that "being stuck can lower it [confidence], but having it can make it easier to get unstuck". The longer a student spends in the liminal space, the more their confidence is depleted.

### 2.1 The Online M.Sc.SED Thesis Write-Up: The Main Threshold Concepts

When starting their thesis, M.Sc.SED students first take a facilitated Thesis Fundamentals module, with weekly deadline and deliverables. This module outlines the steps involved in writing a thesis and helps students to plan their thesis-delivery. During the module, students interact frequently with the online-facilitator and their thesis-advisor.

Prior to the academic year 2015-16, after successful completion of the Thesis Fundamentals module, the student was required to work on their literature review and ensure that it was at a point where their advisor was satisfied for them to progress to writing their thesis chapters. While the student's thesis advisor was available to review content, they were not responsible for 'pushing' the student. The student was obliged to work independently and contact the thesis-advisor when they required feedback.

In a previous survey of students from 2004-2013, students highlighted that moving from heavily-facilitated modules (with staggered tight deadlines) to writing a literature review with the support of a thesis advisor (but without staggered tight deadlines) was a significant stumbling-block. Essentially, many found it very difficult to navigate the liminal space relating to writing the literature. Research by Land, et al. [12] shows that without a framework for engagement within the liminal space, students "may even give up". Attrition rates on the M.Sc.SED increased at the point where students were expected to work independently on their literature review, e.g. 21% of those students who started their thesis in 2013-14 have not completed their thesis to date. It was clear that measures were required to help the

student through the liminal space in the acquisition of the mastery of two main threshold concepts; 1) learning to research and 2) learning to write academically. Student feedback included;

[There was a risk of alienation during thesis write-up]

[I could have done with more support and guidance for the thesis module]

[Improve the level of support and structure around thesis development].

### 2.1.1 *Locus of Control and Self-Efficacy*

Tyler-Smith [20] highlighted that attrition among mature adult online learners is affected by various factors, one of which is the notion of “locus of control” or “place of control” (place can be either internal or external). Rotter [21] defines internal control as “the degree to which persons expect that a reinforcement or an outcome of their behavior is contingent on their own behavior or personal characteristics versus the degree to which persons expect that the reinforcement or outcome is a function of chance, luck, or fate, is under the control of powerful others, or is simply unpredictable”. The “online learning environment is very largely self-driven and dependent on the learners’ ability to manage academic responsibilities, with fewer props than those available in face-to-face classes” [3]. Bandura’s theory of “self-efficacy” describes how a person’s perceived inefficacy in coping with a potentially difficult event gives rise to both fear (of the outcome) and avoidance behaviour and further differentiates between “efficacy expectation” and “outcome expectation” [22][23]. Efficacy expectation is the belief that one can successfully complete a task (or behave in the required way to achieve the desired result). Outcome expectation is a person’s assumption that a certain behaviour will lead to a particular outcome. Essentially, one has the ability to both influence events which have an effect on one’s life and control the way in which these events are experienced. “The strength of people’s convictions in their own effectiveness is likely to affect whether they will even try to cope with given situations” [22]. Successes build belief in efficacy while failures undermine it [24].

The autonomy provided by online learning to students is one of the most significant differentiators between it and traditional learning environments [25]. However, the manner in which this autonomy is handled by the student can have either positive or negative outcomes as the student needs to be able to self-motivate and take control or have a strong locus of control. Ju Joo, et al.(2013) identify a positive locus of control as a predictor for learner satisfaction within an online environment and positive self-efficacy as a predictor of achievement of learning outcomes in online education [26]. Meanwhile, Martinez (2003) regarded diminished self-efficacy and diminished locus of control as factors influencing attrition in eLearning [27]. Her research on adults undertaking eLearning indicated that learners with a weak internal locus of control showed less motivation and persistence in their eLearning endeavours than those who believed that they had control of external events. Her findings are also supported by Barnard, et al. (2009) [25].

## 3 METHODOLOGY

This study draws on data from two sources; institutional records of 108 M.Sc. SED students from the 4 academic years from 2013-2014 to 2016-2017 and an online attitudinal survey deployed to the same 108 students/alumni (14 female, 94 male), yielding a response rate of 44% (n=48). The latter is used as qualitative commentary supporting the authors’ contention that the roadmap for engagement is successful and is guiding the students through the liminal space in their mastery of the threshold concepts. Further, the authors assert that this success can also be verified through an increase in the numbers graduating/completion rate. The breakdown of the 108 students:

- 61 MScSED students starting the thesis on-schedule (in second year)
- 40 MScSED students who take one or more add-on years in order to dedicate time to their thesis
- 7 Software Engineering Diploma students transferring to the MScSED

In this paper, a roadmap of student-engagement through the liminal space of a literature review delivery is described. This roadmap was established to support students in the mastery of related threshold concepts. Feedback and commentary from the 48 survey respondents highlights the evolving success achieved through the implementation of this roadmap.

## 4 ROADMAP OF STUDENT-ENGAGEMENT FOR THE MASTERY OF IDENTIFIED TROUBLESOME THRESHOLD CONCEPTS

The task of writing a master's thesis or dissertation poses many challenges for postgraduate students and requires skills and abilities that are usually new to these students [28]. The task requires “more diligence, and more personal involvement” than at undergraduate level and the result of this work depends on various factors including “methodological skills, self-regulation, and the relationship to the supervisor” [28]. Wagener also recommends that changes are required “regarding the training of students and the coaching methods of supervisors” when writing a thesis [28]. Student feedback from the academic-years 2013-14 and 2014-15 provided evidence that many of these students lacked a strong locus of control. Those students showed a desire to be guided and instructed on the next-steps of their thesis. When asked for recommendations to improve the thesis delivery, suggestions were both externally focussed; [have incremental instalments on thesis materials] [stick with well-defined deliverables] and internally focussed; [the problem I found was to keep up motivation] [to me, the only problem was to organise myself. Motivation].

Reflecting on the results of this feedback and the fact that students were taking additional years to complete the thesis, the M.Sc.SED, Academic Co-Ordinator (responsible for running the Masters programme) identified the main troublesome threshold concepts as; conducting academic research and learning the skills of academic writing. Over the academic years 2015-16 and 2016-17, she established an evolving roadmap for student-engagement with the aim of guiding the student through the liminal space in the delivery of a literature review to emerge with the mastery of the most troublesome threshold concepts. The first step on this roadmap comprised Status-Update ‘Prods’.

### 4.1 Status-Update ‘Prods’

In the academic year 2015-16, the Academic Co-Ordinator contacted the thesis students 13 times (by e-mail) for status-updates on their progress with their literature. The aim was to “prod” those students lacking a strong internal locus of control into taking responsibility for their own learning and to support, motivate and encourage them on their thesis journey. An example of a “prod” status request email correspondence is as follows:

*Hope all is well with you and I hope that your literature is starting to take shape. Please send me a quick outline of where you feel you are. I don't need attachments or anything formal - just a quick status update (one or two sentences) to say if you are making progress with your literature and if you are in touch with your advisor.*

*It is okay to mail me and say you haven't been in touch with your advisor – but do please let me know where you're at. If I know, maybe I can help or advise you. If you leave it too late, you reduce your chances of completing your thesis this year.*

Approximately 50% of students replied to the status request email, with some students providing a short status-update as requested and others asking for advice/help. The latter group generally necessitated a follow-up call with guidance to re-engage them with their thesis journey. In many cases, these latter students were struggling with research activity and rigour and lacking confidence in their research ability and ability to write a thesis. However, following a support call to discuss options, the student gained confidence and tended to feel more positive about their thesis.

[I personally found them very helpful. They kept me on track and forced me to keep up to date or catch up if I was behind]  
[It's nice to have someone who cares in the background] [Without help I'd never have completed]  
[Essential ... and a good way of making sure I kept up to speed. In my opinion .. very good]  
[They were essential because they 1) showed me someone cared and 2) made me set out deadlines for particular milestones]  
[They were well-handled, supportive, understanding and encouraging]

Furthermore, this status-update 'prodding' approach saw the percentage of those starting the Thesis Fundamentals module in 2015-16 and submitting a final thesis in that same year, increase by 10% to 64% (up from 54% in the academic year 2014-2015).

Despite positive feedback and an increase in numbers submitting their thesis, there were negatives in this approach. It was very time-consuming to follow up with students individually and with those who requested additional support. The co-ordinator regularly dispensed the same advice to different students on a number of different calls and it became apparent that this was an inefficient use of time. Furthermore, even with a 64% thesis-completion rate, there was significant room for improvement. It was clear that students needed 'prods' and advice on how to conduct academic research and write academically, but this information needed to be disseminated more efficiently. This resulted in the next evolution of the roadmap for student-engagement – the Thesis Support Modules.

## 4.2 The Thesis Support Modules

In the academic year 2016-17, the Academic Co-Ordinator designed and delivered two Thesis Support Modules;

- **Literature Support module.** This 8 week facilitated-module supports and guides the student on academic research and in writing a literature review. In this module, the students engage in online-discussions where they share their thesis idea, find a relevant academic paper (related to said idea) and explain why that paper supports their thesis argument. Students receive preliminary feedback on their literature from the module facilitator. Having applied the feedback, students can be more confident in their work, before approaching their academic advisor with their literature reviews. The module has been designed such that students are actively encouraged to build a strong relationship and make regular contact with their academic supervisor. The Literature Support module suits those **without** a strong internal locus of control as they are guided through the initial stages of the literature review process by the facilitator. Meanwhile, it also complements those **with** a strong locus of control, thereby reinforcing their work ethic. In approximately 85% of cases in 2016-17, students received academic approval on their literature within 9-10 weeks of starting this module.
- **Thesis Annual module:** All students with approved literature have access to this module and remain enrolled for the remainder of the academic year. The Thesis Annual module acts as an online support group/forum and a place to provide encouragement, requests status updates, ask and answer questions, and provide thesis structure guidelines. Functioning as a "light-touch" module, it does not require deliverables.

## 5 RESULTS

In the Academic year 2016-2017, the Academic Co-Ordinator ran both the Literature Support module and the Thesis Annual module. Student engagement with these modules, facilitated their journey through the liminal space regarding the successful delivery of a literature review. This is supported by the fact that 92% of students starting their Master's Thesis in 2016-17 successfully completed their thesis, compared to 64% in 2015-16, 52% in 2014-15 and 44% in 2013-14.

Evidence for the success of the Literature Support module is shown through student feedback as follows;

[It is important as it sets a deadline and provides a support-network for the literature review]

[It was great. The encouragement and tactic of reading 1 more paper and spending another half an hour paid off]

[Helped me know what I achieved and what was left to be done... of great help]

Furthermore, the authors directly attribute the reduced need for follow-up calls to the support offered by the Thesis Annual module (which provided a space for students to ask questions, collaborate with their peers and be encouraged by the progress of their classmates). This is also corroborated by commentary from students themselves.

[I think the lightweight approach to the Thesis Annual module is perfect as it keeps students on track and provides one place to raise issues, concerns or ask for help]

Eckerdal, et al. explained that the "word threshold might imply that students cross the threshold in a single "aha" moment, but often they seem to take longer" [19]. This was the case with M.Sc.SED

students as they traversed the liminal space. While it is natural that some students will spend longer in the liminal space than their peers, prior to 2016-17, some students spent excessive time (e.g. 1-2 years) in that space, before ultimately losing confidence and giving up. Kristiansen et al., (2009 in Dempsey & Brennan, 2017) maintain that it is important for the educator to create “a framework of engagement” to encourage students to spend time in the liminal space [29]. The Thesis Support module gives students the support to cross the threshold in reasonable time (e.g. 2-4 months) and it also results in a more efficient use of resources.

Fig. 1 shows the gap between the student-numbers starting and successfully completing a thesis in the academic years from 2013-14 to 2016-17. The gap lessened in 2015-16 when Status-Update Prods were introduced. It further reduced significantly in 2016-17, with the introduction of the thesis support modules which facilitated the student journey through the liminal space in the mastery of the identified troublesome threshold concepts of conducting academic research and learning the skills of academic writing.

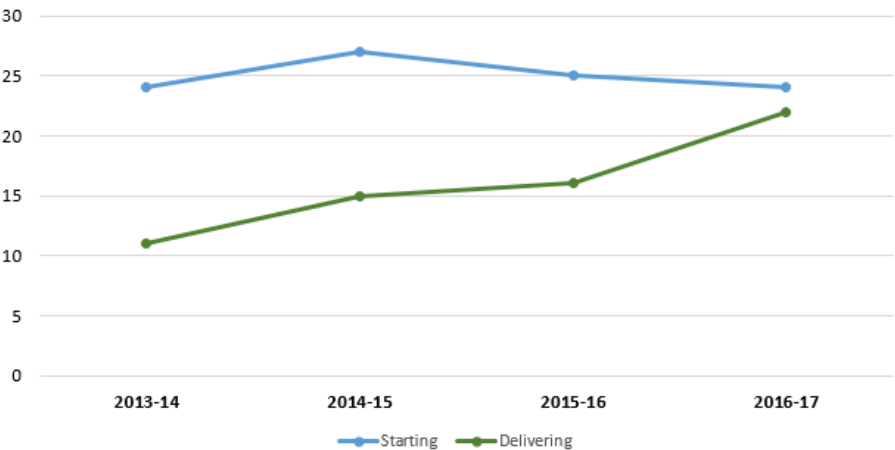


Figure 1: Number of Students Starting and Delivering the Thesis

Fig. 2 shows the trend in the numbers of thesis students graduating in the same academic-year. As can be seen, the percentage increased from 44% in 2013-2014 to 92% in 2016-2017.

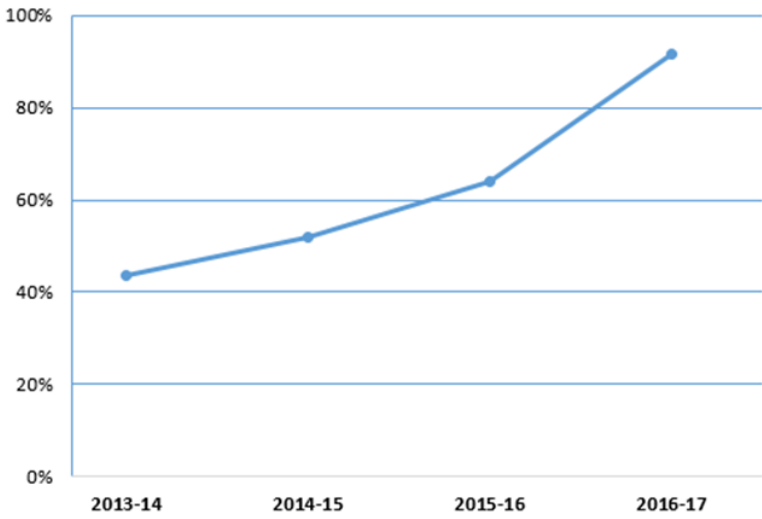


Figure 2: Percentage of Students Starting and Delivering Thesis

## 6 CONCLUSIONS

The Thesis Support modules introduced in 2016-17 appear to have aided students in that academic year with the threshold concepts of learning to research and learning to write academically. Student engagement with those online modules, facilitated their journey through the liminal space regarding the successful delivery of a literature review. This is supported by the fact that 92% of those students starting their Master's Thesis in 2016-17, successfully completed their thesis in that year (compared to 64% in 2015-16, 52% in 2014-15 and 44% in 2013-14). The Thesis Support modules provided students with the guidance to cross the threshold in reasonable time (i.e. between 2-4 months). The Thesis Support modules facilitated the students' journey through the liminal space assisting them in the mastery of the identified troublesome threshold concepts of conducting academic research and learning the skills of academic writing. This correlates with Maki & Maki's [5] findings that online students can perform as well as those in traditional education, but a strong instructor presence is required along with strong instructor-student communications in order to achieve this. Longitudinal data is required in order to conclude that this was not an aberration (e.g. a particularly motivated group of students).

An analysis of the records relating to 108 students surveyed show that 37% had taken the Thesis Fundamentals module in more than one academic year (therefore they had not successfully completed their thesis on their first attempt). This subject is ripe for further investigation.

## ACKNOWLEDGEMENTS

Thank you to all students who gave their time to provide feedback. Your feedback has been very insightful.

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