Variations in students' experience of networked learning in a post-compulsory pre-university context

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Abstract

This small-scale study used a phenomenographic approach to investigate variations in the experience of networked learning in a Maltese post-secondary educational context where students read a two-year academic programme of studies in preparation of tertiary level education. This research looked at an eight-week blended networked learning course which was specifically designed and implemented as an integral part of the pre-university programme and involved students who studied computing at an intermediate level.

As an exploratory study, the research aimed at gaining insight into the different ways students experience networked learning. This research came after earlier research work revealed significant indifference among students to proposed online interactive and collaborative learning activities. Data was collected through five audio-recorded interviews held in Maltese with individual students. The interviews were translated to English after transcription and sent to students for any preferred amendments and approval. In an attempt to maximise variation with a limited number of participants, a purposive sample was chosen on the basis of students' online activity during the networked learning course. Qualitative analysis of accumulated data suggested three distinct experiences tentatively labelled the 'connected experience', the 'strategic experience', and the 'disconnected experience', reflecting online participative attitude, perceived value in the learning approach, and readiness to take control directing personal learning activities. Brought together into a single hierarchical arrangement these three experiences are considered to form an outcome space in phenomenographic terms depicting variation in students' experience of networked learning.

This study is to be considered as work-in-progress on students' experience of networked learning. Different experiences of NL suggest different perceptions of the value and worthiness of online discursive and collaborative activities for learning and consequently different levels of engagement in learning activities using different kinds of networked technologies.

This pilot research study is considered to have opened a research route to deepen understanding of post-secondary Maltese students' experience of networked learning. Given the potential of this learning paradigm for improving teaching and learning, such research may serve to stimulate interest, open conversations, and prompt initiative among local practitioners to explore ways how to effectively use available technologies for enhancing and augmenting teaching and learning in context.

Keywords

students' experience, phenomenography, post-secondary education, networked learning

Introduction

Networked learning (NL) is one of the many forms and practices of e-learning subsuming social constructivist beliefs (Parchoma, 2010). Its focus is on learning and "a social understanding of learning rather than an individualistic or information processing model" (Steeples & Jones, 2002, p.2) is implied. Embracing NL principles, a blended course incorporating "dialogical learning, collaborative and cooperative learning, group work, interaction with online materials and knowledge production" (Dirckinck-Holmfeld, Hodgson & McConnell, 2012) was offered to post-compulsory pre-university students aspiring to pursue higher education courses. This research explores variations in students' experience of NL by way of the lived experience of this course following related research work investigating these students' use of networked technologies.

Contextual Background

The 'Intermediate Basic Principles' NL course (IBP), which is part of the intermediate computing module 'Basic Computing Principles', was offered to students coming fresh from compulsory schooling and choosing to study computing at intermediate level as part of a two-year study programme leading to certification which gives them access to university courses locally.

In Malta, students still come into post-compulsory education with no experience using networked technologies in the formal learning setting (Cutajar, 2010). They are used to classroom-based didactic teaching approaches. In practice, students are frequently observed surface learning subject content and are primarily focused on passing examinations rather than mastering the subject (Buhagiar & Murphy, 2009). Oliver (2008) laments that students beginning university often lack essential study skills including the ability "to assume responsibility for their own learning, to undertake independent research and inquiry, and to communicate and argue their ideas in a succinct fashion" (p.286). He stresses the "need to quickly develop a number of difficult capabilities to achieve success" (p.286).

Offered to students at the beginning of post-compulsory pre-university study, IBP was an attempt to kick-start them to become actively involved in their own learning, to interact and collaborate with peers both online and offline in learning subject content and possibly start developing higher order life-long learning capabilities such as self-management, self-direction and critical thinking competences. This eight-week NL course included six study units each spreading over one or two weeks delivered using the virtual learning environment Moodle wherein students were invited to access study guide notes, course-notes, work-sheets; and to participate in individual, interactive and collaborative activities using a selection of asynchronous networking technologies such as the discussion forum and the wiki. Self-regulated weekly activities encouraged students to link disciplinary content with personal experience, researching, sharing, co-producing and conversing with peers and tutor. This course formed an integral part of the intermediate computing course. It incorporated detailed assessment criteria linked to participation, a weekly one-hour classroom meeting and on-going tutor support. The different support features of the course prompted students to take control of their own learning by engaging with learning materials, tutor and peers through the selection of learning activities online and offline.

Earlier work revealed that although students exploited interactive and communicative technologies ubiquitously as part of their day-to-day activity there was a significant amount of indifference to online interactive and collaborative activities for learning in the formal educational setting (Cutajar, 2010). With a few exceptions, all students accessed the course-notes but the majority did not take part in group online activities. Participation was somewhat increased with growing consciousness of the assessment criteria, particularly when this was highlighted by the tutor during the course (Cutajar, (2010). The reported resistance to the networked learning strategy and pressure to revert back to familiar teacher-centred classroom learning strategies led the authors to question missed opportunities and students' perceptions of NL experience. This preliminary study sought to answer the question 'What different experiences may these young adult students be making when it comes to the lived experience of NL'?

Literature Review

There are several researchers (Kennedy, Judd, Churchward & Gray, 2008; Elwood & MacLean, 2009) reporting missed Technology Enhanced Learning (TEL) opportunities in the formal setting and hence highlighting the non-uniformity of online learning experience within and across contexts. NL requires students to *actively* learn through interaction with learning materials and others including tutor and peers facilitated by the use of technologies. The

emphasis signifies engagement and 'cognitive presence' (Garrison & Anderson, 2003). In its activation, NL demands from students a significant amount of discipline and self motivation (Golladay, Prybutok & Huff, 2000) to take control of their own learning. Moore & Kearsley (1996) note that "students frequently do not understand that they must take more responsibility for their learning … and wait for the tutor to prompt them. This is the kind of misunderstanding that leads students falling behind and becoming dissatisfied" (p.166). Investigating secondary school students' online learning experience, Tunison & Sackney (2004) report that students felt that taking responsibility of their own learning was "self-motivating" and they "were comfortable with this new responsibility – in fact, they viewed it as empowering" and "those students who had been unsuccessful indicated … that they recognised both the allure and the effects of procrastination" (p.38).

From surveys investigating differences between students' expectations about NL at the beginning of a course and their perceptions after NL experience, Goodyear, Jones, Asensio, Hodgson & Steeples (2005) report that with NL experience students still remained doubtful as to "whether the use of the networked learning approach and technology was appropriate and worthwhile" (p.503) for their learning; they still lacked "confidence about the use of networked learning technology" (p.503); they remained unsure of "the utility of the experience of using networked learning technology (gaining useful new skills)" (p.503); and still remained preoccupied with "expressions of intrinsic interest and excitement about the use of networked learning technology" (p. 503). Goodyear et al. (2005) noted that while concerns remained fundamentally stable with NL experience, students' views tended to "moderate with time" and, although the positive feeling about NL remained, it diminished with experience.

In reviewing research literature focused on students' experience of e-learning, Sharpe et al. (2005) note that "the majority of the research to date has focused on observable learner behaviours" (p.5). From published studies they identify emotionality, time management and e-learning skills as significant issues for students experiencing online learning. They are concerned that in general there is "a scarcity of studies of the learner experience" and call for research "in which the learners' own expressions of their experiences are central to the study" (p.3).

Reporting on an extensive project which they claim arose from the recommendations of the Sharpe et al.'s (2005) 'scoping' study, Conole, De Laat, Dillon & Darby (2006a) declare "a profound shift in the way in which students are working" using technologies for learning. They insist that the nature of students' working approach is changed denoting "a rich and complex inter-relationship between the individuals and the tools" and this in eight different ways relating to:

- the pervasive and integrated ways students use technologies to support their needs
- the personalised ways students use technologies to suit their needs,
- students' participation in existing networked communities of peers
- students' expectations and consideration of content material and resources in being of high quality, interactive, always and everywhere available and, open to adapt and remix as required
- the sophisticated information management skills students possess
- the unproblematic transferability of 'living' practices using technologies integratively to 'learning' practices,
- students' changed concept of time and their just-in-time expectation of information and results on demand,
- students' new working practices involving the integrated use of a range of tools demanding higher order competences and expected flexibility.

Conole, De Laat, Dillon & Darby (2006b) confess that only "learners who have been effective in their participation with e-learning were approached to capture their experience with e-learning" (p.154). The declaration of seamless cross-context and cross-platform connectedness needs to be interpreted in this light.

As if in complement to Conole et al.'s (2006a) report and echoing other literature claims of the techno savvy generation of students, Rudd (2006) insists that "learners are essentially 'powering down' at the school gates (p.3) and that it is ripe time we shift from using digital technologies merely for supporting traditional knowledge dissemination teaching strategies "towards a 'third wave' vision that sees them as dynamic tools that can radically alter and enhance what is possible in terms of learning experiences" (p.4). Simultaneously he urges a thorough understanding of learners' needs because otherwise "how can a truly personalised system be developed, and how can we really represent learner voice and offer real choice?" (p.1).

Visions of the 'net generation' and Conole et al.'s (2006a) depiction of the student are not unrealistic. Weller (2007) predicts that "communities are a natural end-point in e-learning" (p.150) and although "currently there is not a sufficient demand from students ... as the 'net generation' enter higher education, they will come with an expectancy

of discussing subjects in detail, seeking alternative views and challenging authority" (p.155). Meanwhile, in a world where the digital divide is bound to remain (Hawthornwaite, 2007), it would be unreasonable to make assumptions and ignore the possible variations in students' technology enhanced learning experiences.

Phenomenography

Focusing on variations rather than commonalities, this small-scale study used phenomenography to explore how students may come to experience NL. Phenomenography is a qualitative research methodology within the interpretative paradigm. While in its early days this research strategy focused on describing the different ways in which people conceived phenomena, more recently phenomenography is also being used to describe different ways in which a phenomenon is experienced (Marton and Booth 1997). Marton (1986) broadly describes it as "a research method for mapping the qualitatively different ways in which people experience, conceptualize, perceive and understand various aspects of phenomena in the world around them" (p.31).

Limiting focus to mapping out the different ways a phenomenon is conceived or experienced within a given group of participants, phenomenography does not commit to some specific position on the question of an independent reality and is hence considered to be a non-dualist research approach. Bradbeer, Healey & Kneale (2004) remark that phenomenographic research "makes no judgements about the accuracy or truth of these conceptions as they may relate to actual phenomena" (p.18). Richardson (1999) also notes that phenomenography assumes a "second-order" perspective while Trigwell (2006) explains that "in a first-order approach, the researcher describes or defines the phenomenon as she or he perceives it, whereas in a second-order approach, it is the experience of the phenomenon as described by others that forms the basis of the researcher's description" (p. 370). For this study, this non-dualistic, second-order outlook of the phenomenographic approach was welcomed as a means for letting the range of different experiences shine through the students' voices as possibly could.

It is pragmatically accepted that a phenomenon may be conceived and experienced in a finite number of ways even though this resulting "set of qualitatively different ways of experiencing is ... not closed" (Marton & Booth, 1997, p.117)). This set constitutes the 'categories of description'. Marton & Booth point out that by these categories of description "the researcher is describing the phenomenon ... no more than partially, from the reports or inferences of the subjects" (p.124). Brought together into some structural relationship, typically by way of a hierarchy, the categories of description form the research outcome. This resulting 'outcome space' provides "a way of looking at collective human experience of phenomena holistically despite the fact that the same phenomena may be perceived differently by different people and under different circumstances" (Akerlind, 2005, p.323). As Akerlind stresses phenomenographic research aims "to explore the range of meanings within a sample group, *as a group, not the range of meanings for each individual within the group* [italics added]" (p.323).

The Study

The fundamental research question of this phenomenographic study was: *What are the potential ways in which a beginning post-compulsory pre-university student may come to experience NL?* In its endeavour, this research work sought to do this by capturing variations across and within accounts of a number of students after the NL experience of the IBP course.

Research strategy

As most common with phenomenographic studies, the interviewing technique was used for collecting data. Practical constraints determined the small number of interviewed students. In pursuit of deliberately increasing possible variation within a limited sample, selection was made dependent on students' online activity when during the networked course "rather than it being representative of its constituency" (Trigwell, 2009, p.370). The sampling strategy excluded students who totally refused the NL experience, avoided all technology-based learning activity including access to course-notes and worksheets, and merely attended classroom meetings possibly not to forfeit their stipend entitlement . With a single exception these students later opted out of the encompassing HE programme or restarted it the subsequent year.

Before the interview, students were briefed on the purpose of the research and consent was sought also for audio-recording the conversation. Interviews were conducted in Maltese to facilitate students who might not be confident

explaining themselves in English. Each recorded interview was transcribed and translated into English. The transcription and translation were emailed back to the participant for any preferred amendments. Though interview guide questions in essence remained the same, from one interview to the other there was greater effort by the researcher to make interviewees *think* about their personal experience of NL and strive for "a reflexive approach that takes into account the social relationship between researchers and their informants and the constructed nature of the research interview" (Richardson, 1999, p.70). Where perceived necessary during the interviews, participating students were prompted to elaborate on their comments by questioningly repeating their utterances in an attempt to curb "interplay between concept, meaning and oral expression" (Sin, p.308). Data collected from the first four interviews was used for the initial data analysis process leaving the data collected from the last interview for a subsequent rudimentary reliability check. Data analysis was conveniently performed interchangeably using Maltese and English versions listening to Maltese recordings and reading through English versions. Going through the recordings one after the other in succession at the beginning aimed to get a collective feel of the data. An intensive iterative strategy for analyzing data was retained throughout in an attempt to increase the truthfulness and trustfulness (Lincoln & Guba, 2000) of the research.

Discussion of Findings

Interleaved with a spiraling coding-revision-recoding process, the iterative approach to data analysis led the authors to propose three different ways how NL may be experienced by students : the 'connected' experience', the 'strategic' experience' and the 'disconnected experience'. The resulting hierarchical relationship forming the outcome space in phenomenographic terms is depicted as in Figure1. This set of descriptive categories is considered to meet phenomenographic theory criteria as set out by Marton & Booth (1997) in that each individual category "tells us something distinct about a particular way of experiencing the phenomenon" (p.125); categories stand "in a logical relationship with one another" (p.125); and the set is perceived to be parsimonious in that there are to it "as few categories as is feasible and reasonable to capture the critical variation" (p.125). Differences are seen to arise from a number of variations across categories, but a number of variations are also observed within given categories:
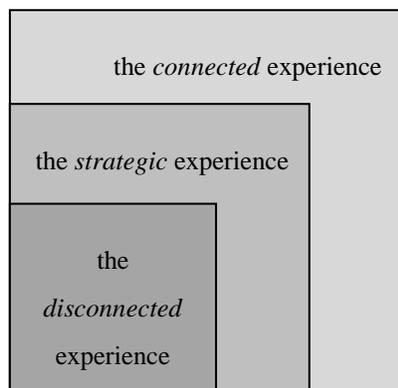
Figure 1: Outcome space

- *The connected experience*

The 'connected experience' of NL finds the student using technologies integratively for learning reflecting Conole et al.'s (2006a) depiction of a student's experience of TEL. For this type of learner, 'living' practices are easily adapted to 'learning' practices: NL is *"nothing new"* (P2) even in admission to it as a new experience in the formal learning setting. The learner is never far off from connectivity and uses it as suited in a just-in-time manner: *"if you have something on your mind you ask about it there and then even from the mobile nowadays"* (P2). NL is considered as a flexible and convenient strategy for intermixing all aspects of learning and other life activities.

Collaboration and learning with others are not only seen as worthwhile activities but practiced frequently. Peers and interactivity are valued as important learning means. The learner is mindful of assessment criteria but the focus is more on learning objectives. Teacher presence is indicated as important: *"there are times when you ultimately need the teacher"* (P2) but the learner of this category exhibits traits of learning independence directing personal learning efficiently and critically. The learner making a 'connected experience' is conscious of NL as a different learning approach, embraces it and values it for different learning and real life settings.

- *The strategic experience*

The 'strategic experience' of NL finds the learner focused on maximizing achievement and acting accordingly. It is the assessment criteria which direct the learning activities of this type of learner: *"There were activities which if it wasn't for the assessment I wouldn't have done them"* (P5). Despite value recognised and participation effort, activity remains dependent on perceived course requirements and assessment.

Collaboration and interaction with peers are valued as a means for learning and support and the NL approach is appreciated for the flexibility it provides. Further, projected as highly motivated to learn and excel, the learner making a 'strategic experience' is also very aware of the responsibility of group members for learning to take place. Course learning materials provided by the teacher (such as course-notes and worksheets) are over-rated despite consciousness of availability and facilitation through internetworking. The teacher remains a primary source for knowledge and learning direction. The shift in learning approach is recognised: *"before I always studied ... face-to-face with the teacher in class and then at home on my own ... I found it better ... in a group there is communication"*(P1) but traditional learning culture is cautiously not abandoned.

The NL approach is valued for present and future learning and for future work practice. It is acknowledged as a useful life-long learning strategy and possibly considered as an *"expected experience"* (P5) or *"an obligatory experience"* (P1) in the formal just-in-case learning environment.

Within this category, variation was observed relating to preference for online learning versus classroom-based learning, the interpretation of value claimed in group learning activities, perception of online learning contact time, the outlook and value perceived of course materials and resources located outside the core formal online setting, the adopted study strategies and the expectation of NL experiences in a formal environment.

- *The disconnected experience*

Learners aligning to the 'disconnected experience' of NL exhibit preoccupations reported by Goodyear et al. (2005). Despite positive utterances, the appropriateness and worthiness of NL is questioned. This learner is not confident using networking technologies: *"Maybe I was reluctant to post ... [given a future NL experience], I think I would be bold and if there is something relevant I try to post"* (P4) and unconvinced of the value of collaboration and interactivity with peers for learning: *"I didn't write much [online] ... sometimes I forgot ... I didn't find anything to say ... I [used to] say to myself : 'why should I waste time'"* (P3).

Assessment links are not enough to instigate online participation. The intent of assessment criteria is acknowledged but not appreciated: *"I agree to assessment linked to tests, access to course-notes and worksheets ... on writing online it makes sense but personally I am not much into it"* (P3). Valued for learning are course elements which relate to teacher-centred strategies (such as availability of course-notes and worksheets, sit-down tests), teacher direction and control: *"collect the homework to see that everybody read the notes and did the worksheets ... collecting it makes the student do it"* (P4). The tendency is to use technology for accessing conventional course learning materials and to work in isolation from others depending on teacher control and classroom-based contact for learning.

Traditional passive learning attitudes are observed to persist despite the NL course approach. The learner of this category appears to be unaware of the different learning approach NL proposes: *"Mostly I studied from the notes because in class everybody was talking ... I was not attentive, I got lost ... I found the notes more useful"* (P3).

The NL experience is appreciated in as far as it provides a just-in-case experience of e-learning but no value is perceived of it as a transformative educational experience for present or future learning, or for work practice: *"if you use it on another occasion you already know how to go about learning using this system ... I expect it to be used more in the field of Computing and the like"* (P4).

Within this category, a number of inter-category variations were also observed. These related to the unfavourable perception of group online learning going from 'discomforting' to 'a waste of time'; the degree of preference in using Internetworking technologies at all; the extent of perceived value and worthiness in NL experience.

Further Observations

As implicated by the proposed hierarchical form of the outcome space, the three categories of description revealed by this study are seen to be in progression of each other going from lower order to higher order ways of experiencing NL. This observation aligns to phenomenographic expectation where "the different ways of experiencing the phenomenon in question can be defined as subsets of the component parts and relationships within more inclusive or complex ways of seeing the phenomenon (Marton & Booth, 1997, p. 124). Additionally, in tutoring the course, one of the authors perceived variation in students' NL experience occurring right from the start of the course. Importantly, these identified categories of description and outcome space are not considered

exclusive. Though different students are found to experience NL differently, all participants of this study were found to find the NL experience pleasant and useful albeit for different reasons

- need time to adapt to the new system though in different ways and time frames
- consider course materials and resources helpful yet rating them differently
- consider teacher presence a necessity

Emotionality, time-management and e-learning skills as identified by Sharp et al. (2005) are perceived to play a significant part influencing variations as well as past cooperative and collaborative learning experience even if this did not involve the use of technologies. Working with the data led the authors to suspect a relationship between the identified categories of NL experience and conceptions of learning. Goodyear et al. (2005) claim this relationship in their context and even point to another research "producing tentative evidence" (p.477) on this issue

The participant projected as having the 'connected experience' demonstrated considerable reflection in critically appraising course materials and resources and the existence of the NL course within the broader traditional learning and living context. Least critical were participants aligning to the 'disconnected experience' category where the criticism was limited to lack of tutor direction and control - the complaint of much talk in the classroom during face-to-face meetings and the suggestion to collect 'homework'. The issues raised by participants aligning to the 'disconnected experience' experience continue to emphasize ingrained passive learning attitudes and the expectation of traditional teacher-centred classroom-based learning approaches despite the challenging experience offered.

The surrounding online and offline learning support of the IBP course, particularly assessment and tutor supportive efforts, are considered to have been most effectual for learners making a 'strategic experience'. They were the most active online, possibly because of the tight link between assessment and learning activities. However, as the course progressed, the participants tending to this category of experience exhibited *willingness* to take responsibility of personal learning activity which might have gone beyond consciousness of linked assessment. There may be in play the issue of students' awareness of NL. It seems that students making a 'connected experience' were aware of the shift in learning approach from the start of the course while students making the 'strategic experience' recognised this shift as the course progressed hence the observed willingness to participate and manage learning activity. Students making a 'disconnected experience' apparently did not discern NL from traditional approaches which characterise their other formal learning experiences. Students tending to 'strategic experience' category felt that a NL experience should be a compulsory learning experience in formal education. Students of the 'disconnected experience' category do not share this view; they only acknowledge value in having had the experience 'just in case'. Students tending to the 'connected experience' category not only find the NL experience a 'must-have', but consider it the way teaching and learning should be approached in today's demanding and rapidly changing world.

Furthermore, whereas students of the 'connected experience' and the 'strategic experience' categories expressed positive feelings about online discursive and collaborative activities (such as the forum and wiki based activities), the students of the 'disconnected experience' expressed reluctance to participate and also feelings of discomfort. These observations might be related to students' awareness of NL experience as a different learning approach. Reporting similar findings wherein experienced students passed both positive and negative remarks about learning through discussion online, Ellis et al. (2006) urge research to investigate relationships between students' feelings and the quality of approaches to postings and performance.

With one exception, participants referred to their personal learning spaces and study strategies. Collected data shows contrasts among participants aligned to different categories. The 'connected experience' finds the student declaring desk-top and mobile technologies used integratively making the learning space ubiquitous and versatile in responding to just-in-time learning needs drawing on teachers, peers and materials and the Internet at large as deemed most suited. The 'disconnected experience' has the student claiming a technology-less, paper-and-pen based personal study space drawing on the limited course-materials provided and recommended textbook. Students tagged to the 'strategic experience' did not mention technologies in their descriptions of (isolated) systematic study methods employed but their comments indicated that they made extensive use of whatever resources they found available. Acknowledging other students' learning activity as also affecting their own learning, students of the 'connected experience' and 'strategic experience' categories complained about the indifference or procrastination of peers.

Participants who projected themselves as making a 'disconnected experience' of NL exhibited a tendency to give one-word answers to interview questions setting themselves as different in this respect from other participants who elaborated and critically reviewed different aspects of their experience as progressively prompted. Whilst using open

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ended written questions to collect data, Bradbeer et al. (2005) made a similar observation and advise caution: "some students wrote very little and caution has to be exercised in regarding their conception as falling into one category or the other" (p.21). However, the possibility for further probing questions facilitated by the interviewing technique still elicited utterances such as 'I don't know', 'yes I think so' and 'no I don't think so' giving the impression of barriers such as less developed communicative skills, reluctance to talk about personal experience and/or heightened perception of power-differential despite effort by tutor-researcher to minimise it.

Conclusion

This small-scale study provides some tentative results in mapping out how students starting out in post-compulsory pre-university education come to experience NL. No claims are made by this research: the sample-size is too small even if measures were incorporated in an attempt to maximize variation captured. Further research is needed to expand what is considered as a pilot research study, by involving a greater number and range of participants to confirm, expand or refute the provisional outcome space proposed by this research for contemplating variations in NL experience.

The IBP course involved a substantial amount of discursive and collaborative interactivity online and offline. Students making different experiences of NL reveal themselves as having different perceptions of the value and worthiness of online discursive and collaborative activities for learning. If at all, students making different NL experiences also appear to engage themselves differently in learning activities using different networked technologies (such as the forum and the wiki). Further research may also be directed at exploring students' approaches to learning using different networked technologies in relationship to students' possible NL experiences.

Despite its limited reach, this study is considered a worthwhile preliminary exploration of variations in students' NL experiences. Continued effort to build the picture of NL for post-compulsory pre-university students can help inform the development of technology-rich formal learning strategies for the not-so-far future which necessarily need to be sustainable and effective if education is to progress. Moreover, this pilot study can also serve to start departmental conversations and possibly stimulate other NL implementation and research endeavour in the local context.

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