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Developing the digital self-determined learner through heutagogical design

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ABSTRACT

This empirical qualitative study investigates whether the introduction of heutagogy in contemporary nursing education can foster the development of the digital self-determined learner, who is prepared to work and live in the fourth industrial age and beyond. The impact of heutagogical design on learner process and outcomes is explored through qualitative framework analysis of learner data and reflective educator observations. Findings suggest that with careful scaffolding and courage in remaining true to the educational philosophy, this approach has the potential to develop learners who demonstrate key principles of heutagogy including non-linear learning, learner agency, capability, self-reflection and metacognition and double-loop learning. This innovative study provides insight into the process of developing the self-determined learner and encourages further research into flexible and learner-centred approaches across Higher Education.

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Heutagogy; self-determined learning; nursing education; learning design; learner agency

Introduction

Learner attitudes are changing (Alexander et al., 2019). Higher Education (HE) is experiencing a much-needed departure from teacher-centred pedagogies towards more flexible, active participation and co-production with learners although it is worth noting that this practice is still variable across the sector. In this context, educators must continue to innovate and adapt their teaching strategies through providing challenging learner-centred environments to meet the needs of contemporary learners. One such learner-centred approach is that of heutagogy or self-determined learning (Hase & Kenyon, 2000).

This study aims to understand whether heutagogical design in nursing education can foster the development of the digital self-determined learner. The impact of heutagogical design elements on learner process and outcomes is explored through framework analysis of assessment data and reflective educator observations.

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Heutagogy as an emerging instructional approach

The term heutagogy was first introduced by Hase and Kenyon (2000) as an extension of andragogy (Knowles, 1968), which has been the predominant adult learning theory for several decades. Heutagogy takes the self-directed learning from andragogy a step further into self-determined learning, shifting the locus of control firmly into the learners' grasp (Blaschke, Kenyon, & Hase, 2014; Gerstein, 2014; Hase & Kenyon, 2013). Heutagogy brings together elements of constructivism (Bruner, 1961; Dewey, 1933; Piaget, 1926; Vygotsky, 1978), humanism (Maslow, 1943, 2013; Patterson, 1973; Rogers, 1969; Rogers & Freiberg, 1994; Valett, 1977) and social learning (Bandura, 1977) to develop capable lifelong social learners with the skills to thrive through rapid change and fulfil a continuous desire to learn (Hase & Kenyon, 2000; Moore, 2020). To support educators wishing to foster a heutagogic learning environment, Blaschke and Hase (2016) suggested a practical framework comprising core principles, processes and design elements of heutagogy. Aspects of heutagogy have been applied to redesign courses and assessments across a variety of disciplines in HE (Blaschke, 2012; Canning & Callan, 2010; Green & Schlairet, 2017; Hase & Kenyon, 2013; Mulrennan, 2018). Research into heutagogy has been gathering pace, however two recent systematic reviews called for more empirical research into this emerging field (Agonács & Matos, 2019; Moore, 2020), particularly highlighting a gap in understanding and applying the principles of the theory. Both reviews also highlight the critical symbiotic relationship between technology and heutagogy, enabling self-determined learners to leverage their resources and connections in new ways based on individual experiences and learning needs (Agonács & Matos, 2019; Gerstein, 2014; Moore, 2020). The rise of heutagogy has closely aligned with the growth of digital and social media which encourages user-generated content, exploration, creativity, reflection and networking (Gerstein, 2013) with the potential for creating the digital self-determined learner. We have experienced through the recent coronavirus pandemic that learners and educators must be able to flex quickly to thrive through online learning (Nerantzi, 2020) and develop the skills for a digitally enabled future workforce.

Developing digitally capable graduates

Employers are increasingly seeking graduates who are 'digitally literate', but these organisations are not always able to provide the necessary education to respond to this need (Kaji, Hurley, Gangopadhyay, Bhat, & Khan, 2019). The importance of the digital economy, as noted in a United Kingdom (UK) Select Committee Report (House of Lords, 2015), emphasised the urgent need for HE to develop job-relevant and future focused digital capability (World Economic Forum, 2018). In parallel, there has been a global increased demand for innovating digital health services to address existing challenges in health and social care (British Association of Social Workers & Social Care Institute for Excellence, 2020; Health Education England, 2018; World Health Organization, 2019). In the UK, a recent National Health Service (NHS) report stated that 'within 20 years, 90% of all jobs in the NHS will require some element of digital skills' and emphasised the need for curricula to develop learner understanding of digital healthcare technologies (Topol, 2019). The coronavirus pandemic has recently challenged the 'normality' of care

provision during which the NHS saw an 800% increase in the use of Microsoft Teams to support remote working (Downey, 2020). Digitally capable graduates are therefore clearly needed to address the future workforce needs of the healthcare sector.

Heutagogical design in practice

To meet this need to integrate digital capability in healthcare education, a new ‘Digital Health’ module exploring how social and digital media can be embedded to trigger positive health and wellbeing outcomes was developed. The blended learning module taught a mixed cohort of second year undergraduate BSc (Hons) (level 5) and postgraduate taught MA (level 7) pre-registration nursing learners as part of a well-established nursing programme at a large UK public university. The module was delivered over four intensive weeks comprising one day of face-to-face and four days of online learning per week. Module themes mapped to the Health and Care Digital Capability Framework (Health Education England, 2018) included: Online profile and professional networking; Strategies to connect and communicate; Privacy, security and safeguarding; Patient and public engagement; and Research and innovation. Specific content and activities were flexed, often within sessions, according to emerging individual and group needs.

Learners were asked to develop a 20 (level 5) or 30 (level 7) minute video presentation for their summative assessment in which they investigated a contemporary issue in digital health and reflected on their professional development. Level 5 and 7 learners were provided with different assessment briefs which constructively aligned to the depth and criticality expected for their level (Biggs & Tang, 2011). Learners were encouraged to choose a topic for their assessment that aligned with their individual interests, experiences and values.

Heutagogy was chosen to inform the learning design of the module as it brings together two key attributes needed in healthcare graduates – digital capability and self-determined lifelong learners (Bhoyrub, Hurley, Neilson, Ramsay, & Smith, 2010). The six core heutagogical design elements outlined by Blaschke and Hase (2016) of explore, create, collaborate, connect, share and reflect were used to underpin the learning design. Examples of individual and group facilitation strategies employed across the module, along with the module-specific aim for each element of heutagogy design are summarised in Figure 1. This research seeks to understand the impact of this heutagogical design approach on the development of the digital self-determined learner.

Method

Setting and sample

Learners at the University of Salford in the second year of their BSc (Hons) or MA in Pre-Registration Nursing studies were asked to express preferences from four possible optional modules based on contemporary issues in nursing. Among them was the ‘Digital Health’ module worth 20 credits for level 5 learners on the BSc programme and 30 credits for level 7 learners on the MA programme. Whilst their preferences were taken into account where possible, logistics of managing the large cohort meant that many of those who were assigned this module had not selected this subject (digital health) as their first preference. In total, 55 learners (43 at level 5 and 12 at level 7) were

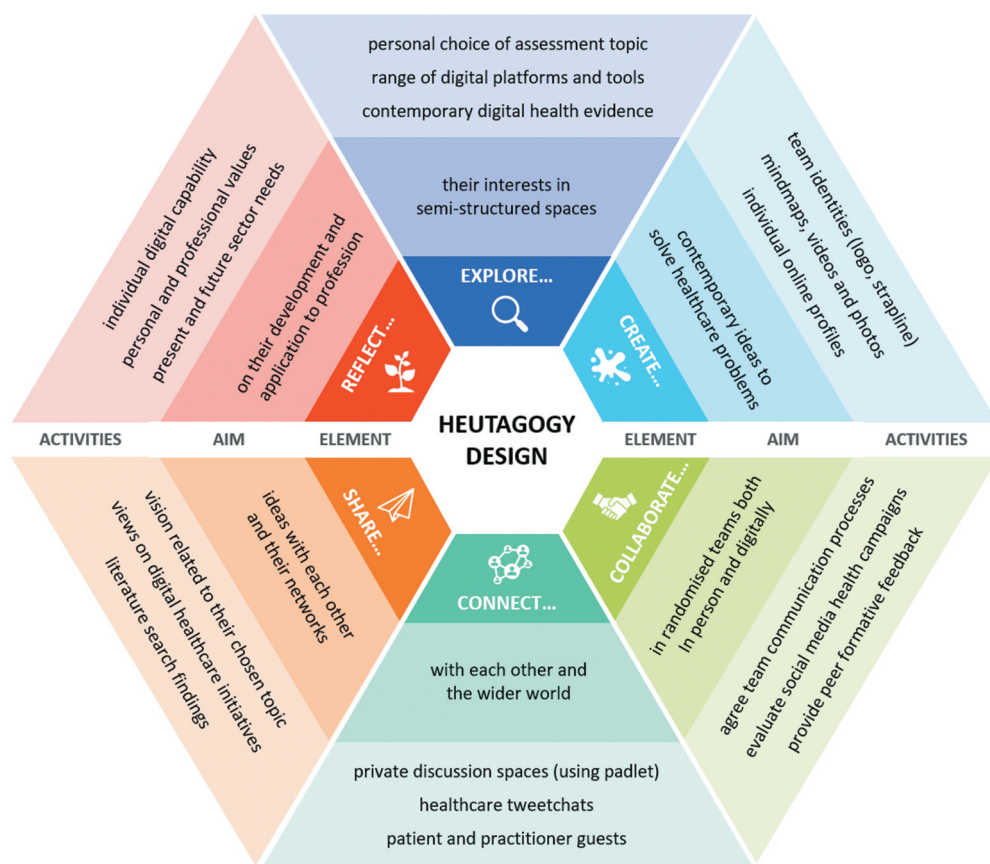


Figure 1.

assigned to complete the module. Of these learners, 22 consented to participate in this study; however, two level 5 learners withdrew from the course or interrupted their studies prior to data analysis which left 20 learners remaining in the study representing 39% ($n = 16$) of the final BSc cohort ($n = 41$) and 33% ($n = 4$) of the final MA cohort ($n = 12$).

Ethics

Following institutional ethical approval, learners completing the module were provided with participant information sheets and those willing to participate in the study completed consent forms. As the researchers in this study, we considered the possible power imbalance as both lecturers and markers on the module. It was therefore made clear that there were no disadvantages in choosing not to take part in the study and that analysis of data from this study would only occur once all learners had been through the relevant exam boards including any resubmissions.

Data collection and analysis

This paper presents qualitative data from two sources. The bulk of the data comprised transcription of the learners' summative video assessment content ($n = 20$, 440 minutes in total) to understand the learner experience of the heutagogical design. As described earlier, the learners investigated a contemporary issue in digital health and reflected on their professional development in their assessment. Commentary on the learning design and process was not a requirement of the assessment, rather the content in the assessments was interrogated for evidence which pointed towards the development of self-determined learning. A case and thematic framework analysis method was adopted to analyse the video content. Framework analysis provides a systematic approach (Ritchie & Spencer, 1994), which has been gaining popularity in social and policy research (Krueger, 2014; Lacey & Luff, 2007; Miles, Huberman, & Saldana, 2013; Ritchie, Lewis, McNaughton Nicholls, & Ormston, 2013; Zimmerman et al., 2004). It was deemed a suitable method for this study in that it highlighted different aspects of the phenomena being examined to identify meaningful themes whilst retaining the accuracy of data for each individual learner (Ritchie et al., 2013). All research data were anonymised, and each participant transcript was coded using 3-digits (100–119). The data were analysed using the following five-step process as outlined by Ritchie and Spencer (1994):

Step 1 Familiarisation with the data – Both researchers jointly watched the videos and read the transcripts.

Step 2 Development of framework – The previously identified five key principles of heutagogy (Blaschke & Hase, 2016), namely nonlinear learning & teaching; learner agency; capability; self-reflection and metacognition; and double-loop learning were used to create the initial framework through which the data could be organised. Whilst the framework method can align with either deductive or inductive qualitative thematic analysis (Gale, Heath, Cameron, Rashid, & Redwood, 2013), the researchers chose to adopt this deductive approach of pre-defined codes for the initial stage of data analysis to align with the study aim of measuring the impact of heutagogy design elements on the development of self-determined learners.

Step 3 Indexing – Each researcher independently and systematically coded the transcripts, indexing this data against the framework. Coding and indexing continued until the researchers agreed saturation had been reached. As a result, one additional principle and 14 themes inductively emerged from the data and created the final framework.

Step 4 Charting – An excel spreadsheet was used to manage and filter the dataset (Gale et al., 2013). The coded data was transferred to the spreadsheet and sorted by principle, themes and participants. The data for each principle and theme was then summarised as shown in Table 1.

Step 5 Mapping and interpretation of the data – During this stage, the researchers came together again to make sense of the results using their own knowledge and experience as facilitators. They used an intuitive and imaginative stance, an approach favoured by Ritchie and Spencer (1994). Reflective qualitative data from the educators provided an additional lens through which to view the challenges and benefits of adopting a heutagogical framework and supported the meaning making of the learner data during step 5 of the analysis described above. The researcher-educators on the module ($n = 2$) arranged regular reflective conversations during and after the module to reflect on our

Table 1. Learner assessment analytical framework summary.

Learner	103	112	104	109	100	102	106	111	101	107	110	113	115	116	117	119	114	105	108	118
Level of study	5					7														
Heutagogy principles	Themes identified during data analysis																			
Non-linear learning & teaching Learner agency	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
			X						X		X	X				X				X
	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X
	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Capability			X	X		X	X	X	X	X	X	X	X			X	X	X		X
			X	X	X		X	X	X	X	X	X	X	X		X		X	X	X
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
		X	X																	
Self-reflection & metacognition	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
Double-loop learning Learner context [#]			X																	
	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
	X			X	X															

Note: [#]New principle emerging through data analysis.

observations of the learning process. Reflective conversations with co-teachers have been shown to support the development of reflective practice and impact on teaching practice (Crow & Smith, 2005). Notes and actions from these conversations were logged in a shared document for subsequent thematic analysis against the framework created in this study.

Findings

The findings are presented in sections aligned to the heutagogy principles used as the initial deductive framework for thematic analysis: Extracts from transcripts are followed by the unique learner identification code (100–119) in brackets. In the development and application of the working analytical framework, one additional principle (learner context) and fourteen themes emerged from the data, summarised in [Table 1](#):

- Nonlinear learning & teaching
 - Theme 1 Increased awareness and knowledge of subject
 - Theme 2 Non-linear learning process
- Learner agency
 - Theme 3 Developing unique ideas or learning path
 - Theme 4 Exploring resources to learn independently or through social learning
 - Theme 5 Independent goal setting, going beyond the learning outcomes
- Capability
 - Theme 6 Confidence
 - Theme 7 Competence in digital learning
 - Theme 8 Competence in subject
- Self-reflection & metacognition
 - Theme 9 Reflective practice
 - Theme 10 Metacognition on their discipline and profession
 - Theme 11 Metacognition on the way they learn
- Double-loop learning
 - Theme 12 Learning influenced beliefs, assumptions, values
- Learner context
 - Theme 13 Baseline context
 - Theme 14 Lack of awareness of relevance to profession or studies

Three themes were ubiquitous across the study sample: increased awareness or knowledge of the subject (digital health); competence in digital learning; and reflective practice.

Nonlinear learning and teaching principle

Non-linear learning describes the process of learners autonomously choosing their own learning path rather than a teacher-directed path, self-regulating their learning (Peters, 2002). Analysis of the transcripts revealed shifts in the learners thinking illustrating increased awareness and knowledge of the subject (theme 1), which for this module was digital health. Language used by learners in their assignments including ‘broadening my knowledge’, ‘make me think’, ‘changed’ and ‘realised’ suggests that they had changed the direction of their learning path as a result of exploring their topic of interest:

My opinion on how technology can influence healthcare delivery has changed (104)

I realised the importance of, and understand digital health (110)

The biggest thing I feel like this module has done is to make me think about how modern technology could be used to improve life of our patients (111)

As they progressed along the exploratory paths of the individual topics they each chose to investigate for their assessments, the learners began to take their own initiative and experiment in determining their non-linear learning process (theme 2). These loops of exploration clearly influenced their autonomous decisions to change or adapt their course of inquiry:

As I begun to explore, I realised that the more I explored the more I discovered ... throughout the digital health course I have discovered many studies ... I decided to do a little more research, I found an interesting article. (101)

Phrases such as 'I wanted to', 'I was curious', 'I found', 'I started to' indicated active involvement and ownership of their learning process. Several participants also noted surprise on aspects of their independent research into the subject showing their investigations took unexpected directions, indicative of autonomous self-regulation of learning:

That blew my mind a little bit I wasn't expecting it ... I wanted to find out ... I was curious now ... so I started looking into how that mechanism worked ... There was loads of things that I found ... So, what do we do? ... And what are we doing about this? ... I actually spoke to a representative of UK Rehab, just to see what support there was (100)

Whilst all learners illustrated a shift in their awareness of the subject, evidence which could be interpreted as related to the non-linear learning process was only found in six of the assignments; therefore, further investigation would be useful to explore the nature of this process.

Learner agency principle

This principle refers to the learner being at the centre, and fully engaged in their learning, with the will and power to act (Gao, 2010; Hase & Kenyon, 2000). Three areas of learner-centredness and learner agency emerged from the data, the most predominant of which was the learner's capacity in developing unique ideas or learning path (theme 3). The transcripts showed that the learners were generating their own ideas and undertaking independent investigations outside the module requirements demonstrating their levels of engagement and commitment to action. For example, one learner had an idea to create a survey to compare the literature with the real-life experiences of their personal network:

So, to find out more ... I created a short survey ... From gathering my findings ... it was evident that ... (117)

Whilst other learners came up with their own solutions to contemporary issues in their discipline (nursing) based on previous literature, showing the will to learn and innovate:

So my idea would be to create something very similar to this, to have a nurse-led monitored Facebook group, a secret Facebook group where adults with atopic eczema could discuss their condition, discuss treatments, ask the nurses questions, the nurses could then signpost them (119)

The data clearly illustrates the different ways learners chose to experiment and explore the subject including trying new technologies and joining new social media groups:

I began to try new digital devices ... I began to use Facebook closed groups and forums (104)

I explored new ways of making presentations and conducting research ... I've discovered a whole new way to teach and learn about childhood obesity (106)

However, the evidence also suggested not all learners benefited in a similar way through their use of more passive language such as 'was told' and 'had to do' indicating a potential lack of learner agency:

I was told ... this course has highlighted to me ... we don't seem to have a choice (102)

The variety of assessment topics illustrated that the learners interpreted the freedom to follow their individual interests and ideas in one of three ways: evaluating current provision; exploring broad concepts in the subject and; coming up with their own innovative solution to an issue they felt strongly about. Several learners found this freedom to develop their own ideas in a safe space with their peers and the module team impacted positively on their learning:

I believe the good things about the subject is being able to identify ways of understanding ... in your own way by researching the subject you want to choose, as well as receiving feedback from your mentors and peers, which help steer you in the right direction (113)

This example also maps with the theme of exploring resources to learn independently or through social learning (theme 4). Learners used terms such as 'searching' and 'exploring' as they described their independent investigations into their chosen topics. They independently found and applied models such as 'what, so what, now what' (Driscoll, 2007) and 'PEST' (Sammut-Bonnici & Galea, 2015) to help them understand their topics further:

So this is quite a complex area and I did struggle a bit and the PEST tool really enabled me to break it down, and to understand it a little bit better, and to focus my ideas (119)

Learners also leveraged their networks by independently contacting wider communities or interacting with peers within and beyond their cohort in new ways, suggesting they found value in social learning:

I actually spoke to a representative of UK Rehab just to see what support there was (100)

... module has opened me up to new ideas around blogs and closed Facebook pages ... I'm now part of a paediatric student nurse blog (101)

The data illustrated examples of learners pushing their boundaries through independent goal setting, going beyond the learning outcomes (theme 5). This suggests learner agency as they were identifying ways to further develop themselves outside the scope of the module content. Language indicating these personally driven goals included 'set', 'pushed', 'goal', 'need', 'wish' and 'improve':

I intended to present my work differently to improve my skills and learn something new (101)

I set myself the challenge of having a minimum of one hour a day digital media free (105)

I created an animation. This was where I really pushed myself creatively and with my technological skills, I'd never done anything like this before. I'd never created an animation and I was really proud of the end result (119)

The data suggest that learners experienced the academic freedom needed to generate ideas, find and use resources and make connections to help them learn about their chosen topic.

Capability principle

Capability describes not just the ability to acquire knowledge or skills, but the ability to apply them in different circumstances (Blaschke, 2012). Many of the learners reflected on confidence (theme 6) in their assignments. They described increases in their confidence to find information, create, collaborate and communicate as well as help and advise others on the subject:

I especially felt more confident in the creation, innovation and scholarship domain, which is the one I originally felt least confident in . . . I now have much more courage and enthusiasm . . . I also feel more confident in the communication and collaboration and participation (110)

. . . now I feel a lot more confident when it comes to using technology and finding information for my chosen subjects (104)

Another thing I have learnt is to always teach my colleagues wherever possible (119)

In contrast, learners also discussed frustration and a lack of confidence, particularly in relation to successfully completing their video assessments or due to increased self-awareness of their digital footprint when posting online:

I have some previous experience of using digital software to create videos but do not feel confident in using this software to create a video for this assessment (109)

I struggled to make this PowerPoint into a video presentation and the fact I don't have these capabilities really frustrates me (111)

I am not as confident in posting due to being aware of my online professional persona (118)

Despite the lack of confidence from some individuals, all learners in this study demonstrated the competence in digital learning (theme 7) required to produce their video assessment. Some experimented with new technologies to create the videos, whilst others concentrated on using something more familiar. Examples of technologies they chose to learn and develop included Adobe Spark, audio and video PowerPoint narrations, animations and images:

Before starting the digital health course, I had not heard of Adobe Spark and now I'm using it to create my assessment in an interactive and digital way (101)

I've been supported to explore new and exciting ways to present my work such as voice audios, animations and applying pictures for presentations (106)

Language such as 'try' and 'joined' indicated that learners chose to experiment with social media platforms such as blogs, Twitter, Facebook, LinkedIn and WhatsApp in new ways, linking with theme four (exploring resources to learn independently or through social learning). This resulted in developing their digital learning capability through the application of their skills in different settings:

I began to try new digital devices . . . I began to use Facebook closed groups and forums (104)

Throughout the digital health module I've joined twitter and made a linkedin (101)

The module as well as research in my topic has increased my digital capabilities, in relation to accessing media and working with other people in social networks to share ideas and interact and communicate (113)

The learners discussed their competence in the subject (theme 8), in this case digital health. The data suggests they realised the importance of the subject for their discipline and future profession. They indicated readiness to apply their capability and also to help others, advocating for the subject in their future roles:

I feel that I will be able to promote the usage of digital media more effectively and be a driving force (105)

I can take these advancements with me, as I progress on my course and they will influence my role as a nurse, as I support my colleagues to also aim to become more digitally literate. (106)

I feel ready to overcome any digital challenges that I might be faced with in the future and be an advocate for digital health (110)

I realise that I should be beginning to promote and advocate digital health, I now realise the importance of digital health (114)

A true reflection of capability development is difficult to measure in a time sensitive module however the data suggests that at least some learners were beginning to apply new knowledge and skills in other parts of their life whilst others felt confident they could do so in the future.

Self-reflection and metacognition principle

This principle portrays the holistic reflection process in learning, not just raising the awareness of what was learned but also why and how the learning happened (Brown, 1975). All the learners in the study demonstrated reflective practice (theme 9) in their assessments however this was a learning outcome being assessed therefore evidence was expected in this area. The learners exhibited reflective cycles through considering their strengths and areas for development ('re-evaluate', 'I'm not'), questioning their behaviours and motivations ('why do I', 'noticed I was'), raising their self-awareness ('made me think', 'realised') enabling them to identify and take action ('further develop', 'better').

I think I should really be at the forefront of the technological revolution which I'm not (102)

I sort of reflected on myself ... in the expectation that when I post something ... why do I want likes? ... and why is that? ... So that made me think ... does that mean ... (101)

Thinking about it has made me realise, made me look at things differently, made me see how in the future my nursing practise, where I work and where I think about things that I could be doing better, it has definitely had an impact (112)

The data also provided evidence of the learners evaluating their beliefs on the subject (digital health) indicating metacognition on their discipline and profession (theme 10). The data show they had considered the meaning of the subject not only for themselves ('values I have', 'help me to'), but also how they see this influencing their profession

(‘empowering others’, ‘needs to be embedded’, ‘training’, ‘needs to change’, ‘must adapt’) and the care they provide (‘enhance’, ‘improve’, ‘best quality’):

I feel that the values I have as a student nurse will allow me to incorporate the use of digital media into my professional life, empowering others to do the same, in order to enhance the patient experiences and outcomes (105)

Having a good knowledge of the different types of digital technologies service users are connecting with would help me to build a better therapeutic relationship with them (106)

Improving digital literacies across all health and social care landscapes needs to be embedded . . . as nurses we should seize the opportunities arising and be advocates for the use of digital technology and every day practice to improve health outcomes (110)

Some learners also reflected on their motivations and optimal processes for learning in their assessments i.e. metacognition on the way they learn (theme 11). The analysis indicated awareness of their personal learning preferences through identification of language such as ‘enjoyed’, ‘enabled’, ‘like to’ and ‘frustrates’:

I’ve enjoyed this module, and I’ve been able to research a topic that is personal to me (111)

I do like to find the balance between technologies and traditional methods of researching (113)

The learners reflected on how, by finding their own solutions not provided through module content, they were able to deepen their understanding of the subject and their own practice:

So this is quite a complex area and I did struggle a bit and the PEST tool really enabled me to break it down, and to understand it a little bit better, and to focus my ideas (119)

The learners illustrated awareness of how they will continue to learn and the impact this will have on their career using keywords such as ‘expand’, ‘never stop’, ‘deeper’ and ‘future practice’:

I’d like to take this opportunity to expand on those knowledge and skills to benefit my future nursing practice (106)

I realise that in this profession, my personal and professional development will never stop and that there is always more to learn, or deeper to research (114)

Double-loop learning principle

Double-loop learning depicts the process of thinking critically and creatively, not just relying on past experience but trying new ways of thinking and doing which may influence their previously held values or beliefs (Argyris & Schon, 1978). Double-loop learning proved difficult to extract from the other principles and themes as this process seemingly did not happen in isolation. The data suggested that following and exploring their own interests in the subject (digital health) led to individual goal-setting and independent learning activities. This resulted in increased capability, reflection and metacognition on what, and in some cases how, they learned, understanding what that learning meant for them, both as individuals and for the profession. The theme learning influenced beliefs, assumptions, values (theme 12) emerged from data such as ‘change’, ‘discovered’, ‘opened me up’, ‘I believe’ and ‘now appreciate’ that specifically illustrated the double-loop in action:

I will change the way I will practise in the future when it comes to being digitally literate ... my opinion on how technology can influence healthcare delivery has changed (104)

As a student nurse, I didn't realise the importance of being digitally literate ... I now appreciate the need for all new nurses and the current workforce to embrace and promote the use of digital health (107)

So this has been eye opening, amazing learning experience ... Exploring such a complex topic ... was difficult also rewarding. The lessons I have learnt, I will take into my future practise ... (119)

Interestingly, whilst for some embracing the digital represented a development goal, one learner identified a personal goal of stepping away from the use of technology to protect their digital wellbeing. This example highlights independent goal setting, the capability and confidence to experiment with their own ideas, reflection, metacognition and double-loop learning:

Upon reflection ... I realised ... I set myself the challenge of having a minimum of one hour a day digital media free. Initially, this challenge failed ... However, with perseverance I found this task becoming easier ... Over time, I felt myself become less reliant on technology and I am feeling the health benefits ... I've been able to connect on a deeper level with friends and family during technology free contact (105)

Learner context principle

During the framework development stage of qualitative data analysis, an additional principle (learner context) and two themes emerged from the data. Learner context acknowledges the multifaceted experiences the learner brings into the learning environment (Tessmer & Richey, 1997). For this study, baseline context (theme 13) involved the learners starting point in relation to the subject of digital health. The data illustrated that the learners were immersed in the daily use of digital technologies in their personal lives using language such as 'addicted', 'lurker', 'technology lover' and 'constantly connected':

I have always grown up with digital technology being part of my life every day ... I am a confident user of technology (101)

A self-confessed technology lover with access to laptops, ipads, smartphones and more (105)

I am from a generation of social media users, who have grown up with the boom of this culture (111)

In contrast, learner 111 also indicated a preference for learning from non-digital resources when it came to studying:

As a mature student ... I just used books ... teach myself more about through reading a book rather than sitting at a computer. (111)

Despite living with these technologies, learners initially demonstrated limited awareness of the relevance of the subject (theme 14) to either their studies or profession. This was evident from language such as 'not yet encountered', 'didn't realise' and 'did not understand':

As a student nurse, I didn't realise the importance of being digitally literate (107)

When I first started on the module, I did not understand what digital health was and what it had to do with staff and patients in healthcare (113)

Though I am a regular user of technology and social media, I was unaware of the amount of digital technology available to help users manage their health and life-style (116)

This principle enabled a comparison to be made between the data mapped in the other themes and the baseline context and awareness of the subject. This allowed for greater interpretation of the data across the principles to provide a clear picture of the learning journeys completed by the participants in this study.

Educator reflections

Many learners who were assigned this module had not selected this subject (digital health) as their first choice. We therefore expected some resistance; however, we were surprised by the level of resistance expressed during open dialogue in the early stages of module delivery. We found this was partly grounded in learners difficulty in connecting the subject to their context as student nurses (theme 14), so we worked flexibly to address these issues using applied research and practical case studies including guest contributions from current health practitioners and patients. We encouraged the learners to engage with the six core heutagogy design elements (explore, create, collaborate, connect, share, reflect) through a range of activities (see [Figure 1](#)) to cement the relevance of the subject to their individual contexts.

We also experienced significant resistance in engaging with activities to develop learner agency (themes 3, 4 and 5) such as open ideas generation and collaboration in groups, compared with the teacher-centred approaches they may have previously experienced. Despite critical pedagogical discussions exploring the evidence base of heutagogy, we found that learners would quickly return to a 'default' mode of asking for advice, additional structure and even requesting templates to ensure they were 'getting it right'. Instead of providing answers, we gently but consistently challenged their thinking through open questions to develop their independent and collaborative learning skills. This persistence gradually led to the emergence of a range of independent ideas from the learners (theme 3). The learners found this process challenging, as did we, but by engaging with the process they became more independent, and this was clear in their assessment content. All the markers on the module commented on the depth to which learners had engaged with the subject in the time between the module delivery and assessment submission.

Our reflective debriefs as educators became vital in learning from our experiences, challenging our thinking and identifying solutions. We noted the high levels of cognitive and emotional energy we expended throughout the module. We had to find a balance between flexing in-class and online activities according to learners needs, whilst remaining firm in challenging our cohort's thinking about what learning is. This needed a coaching approach through active listening, challenge and support, asking open questions and providing calls to action (Whitmore, 2017). This process challenged our own values as educators and at times we questioned whether we were doing the right thing with the learning design which sometimes felt overwhelming. The debriefs enabled both debate and reassurance, helping us to stay true to our philosophy

and further develop our skills as facilitators of learning. In our experience, this process enabled the learners to develop their own knowledge and beliefs, interact and process new information to develop new meaning and application to themselves as lifelong learners.

Discussion

This study is the first framework analysis of learner assessments seeking to understand whether heutagogical design can foster the development of the digital self-determined learner. The qualitative evidence presented in this paper suggests that, when facilitating learning guided by heutagogy design elements, all five key principles of the self-determined learner as reported by Blaschke and Hase (2016) can be developed across a cohort to a variable extent. The additional principle of 'learner context' and fourteen themes of the final analytical framework in this research sheds new light on the theory and application of heutagogy as an emerging instructional strategy. The research brings depth of analysis to heutagogy principles and illustrates how they are interdependent in the creation of self-determinism. This is summarised in Figure 2 which illustrates the interconnected nature of non-linear learning, learner agency, capability and self-reflection and metacognition. This research presents learner context as a foundation

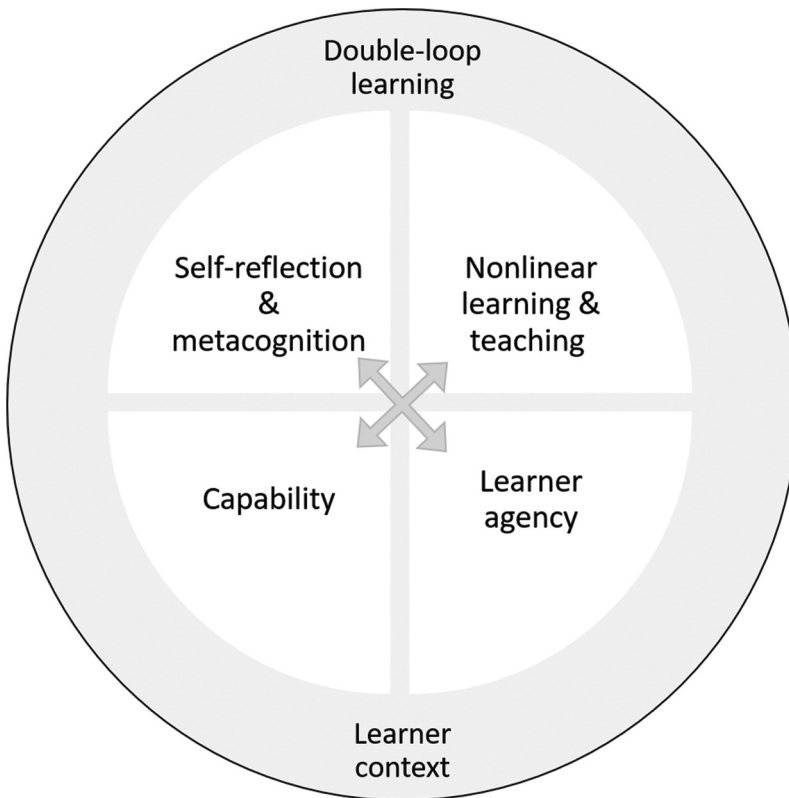


Figure 2.

principle needed to fully understand the others, and double-loop learning as a holistic principle which occurs through engagement with the other principles.

Learner context

The study highlights the need to understand learner context as a heutagogy principle in order to effectively flex to individual and group needs and previous educational experiences. Many learners on this module did not select the subject as their first preference to study therefore increased effort was required to initially engage the learners with the topic. Given the subject of this module, it was also important to avoid making assumptions about the digital context and capability of learners therefore the digital visitor-resident continuum (White & Le Cornu, 2011) was helpful for the educators understanding and appreciation of the diversity and heterogeneity at both the individual and cohort level of learner online engagement. The researchers did not map module preferences against the study participants and therefore cannot comment on whether this affected the data. Further investigations could explore the possibility that those who selected the module as their preference may be more likely to engage with a heutagogical approach.

Non-linear learning & teaching and learner agency

The module was situated within a traditional professional degree structure in a HEI with understandably structured quality processes. The learning outcomes and assessment for the optional modules were approved before the subject of digital health was integrated into the programme. Applying a non-linear approach to learning and teaching and incorporating flexibility and negotiated elements recommended for heutagogy (Blaschke & Hase, 2016) within these constraints proved challenging which concurs with the findings of a recent heutagogy systematic review (Moore, 2020). This suggests that further work is needed across HE quality processes to encourage system agility whilst maintaining rigour of the academic process. The non-linear flexibility was introduced by encouraging learners to investigate topics related to their own interests, experiences or values in a semi-structured learning environment, which also resulted in leveraging learner agency. This approach of encouraging the learner to identify and follow their passion is common in both primary school (Liberto, 2016) and doctoral education (Walker, Golde, Jones, Bueschel, & Hutchings, 2009) but may be somewhat lost in the attainment-focused years of high school and undergraduate HE. This experience indicates the need to rethink and adapt HE policy and practice to remove barriers in enabling the true integration of learner-centred strategies such as heutagogy.

Through analysing the assessments, it was clear learners explored their chosen topics in different ways, some evaluating 'known' initiatives, others envisaging 'unknown' futures, generating innovative ideas and thinking beyond the learning outcomes. This illustrates that learners will find cognitive stretch and challenge in different ways and incorporating personal choice is a useful way to engage learner agency and personalise learning (Holmes, Anastopoulou, Schaumburg, & Mavrikis, 2018). It is important to acknowledge that the individual learner choice on how much to stretch and challenge themselves illustrates different but equally valid routes to non-linear learning,

contributing to closing the gap on the paucity of research into the non-linear learning aspect of heutagogy (Agonács & Matos, 2019; Moore, 2020).

The learners found the delivery of the module challenging and significant psychological, emotional and cognitive resistance was encountered during the module, both in terms of the subject relevance and the facilitative delivery style. However, the resulting assessments illustrated the eventual value they placed on this approach and the learning they gained from following their own autonomous paths. A scaffolded coaching approach seemingly encouraged the learners in this study towards greater independence and learner agency through their Zone of Proximal Development (Vygotsky, 1978) when supported by their peers and the teaching team. In future curriculum design, it is important to introduce critical discussions on effective learning from the beginning of a course to agree realistic expectations and acknowledge the sometimes uncomfortable and challenging spaces that are needed for learning to happen (Carpenter, Witherby, & Tauber, 2020). This shift from passive to active participant in their own learning required considerable flexibility, energy and time through a balance of challenge and support from the educators (Blakey & Day, 2012), aligning with the characteristics of the future learning leader articulated by Hase (2014).

Capability and self-reflection and metacognition

A shift in awareness or knowledge of digital health, digital capability and reflective practice was ubiquitous in the study sample although that may not be true for the wider cohort of learners on the module and these outcomes were perhaps expected given the context of the data – assessments investigating contemporary issues in digital health and professional development reflections. This also raises the question of honesty in reflective assignments although a previous study reported that almost 68% of learners were at least 80% truthful in their reflective assignments (Maloney, Tai, Lo, Molloy, & Ilic, 2013) suggesting that dishonesty was also unlikely in these assignments.

A recent heutagogy review (Agonács & Matos, 2019) suggested that longitudinal research was required to measure capability development; however, this study illustrates that a shift in capability can also be achieved over a relatively short intense timeframe.

Double-loop learning

Evidence in this study for double-loop learning showed that shifting learner values and beliefs seemingly occurred where learners explored their interests through non-linear learning and learner agency and reflected on their capability which are key elements of developing lifelong learners (Bhoyrub et al., 2010; Blaschke, 2012; Moore, 2020). The process appeared to be active throughout and there emerged a focus on actions for their personal and professional development as well as recommendations for the healthcare sector more widely. Interestingly, the themes emerging in this study were inextricably linked throughout the process, much like the strands of a woven rope, rather than following each other in a linear fashion. The learning design is similarly interwoven for example, designing ‘collaborating’ activities cannot happen without also ‘connecting’ and ‘sharing’. Future studies could further investigate the interconnected nature of heutagogy design elements and principles.

A new method for educational research

A scoping review of the literature provided no evidence of researchers who have used a framework analysis method to explore the content of academic assessments. Framework analysis was originally designed to be used in social and policy research (Ritchie et al., 2013) and has been applied in health research (Gale et al., 2013) but this is seemingly the first study which adopts this method in educational research. Other content analysis methods have been utilised in educational research, primarily to draw out themes from assessment topics rather than for seeking evidence of the educational process. For example, medical learner essays have been analysed for themes in both professionalism (Park, Shon, Kwon, Yoon, & Kwon, 2017) and experiences of medical errors (Martinez & Lo, 2008).

The researchers were also unable to find any evidence of previous studies involving transcription of video assessments for thematic analysis although video assessment is still a fairly new approach across HE. This innovative method highlights the potential for interrogating the content of secondary data such as assessments, particularly those with reflective elements, to provide further insights into the learning process in HE even when the assessment is not specifically designed to explore the learning process. However, this is also a limitation of this study in that the learners were not directly asked about their experience of the heutagogical design. Further research could triangulate the direct experience of learners with the evidence drawn from their assessments which may also eliminate the potential for ‘educator as researcher’ bias (Stenhouse, 1981; Suter, 2012).

Conclusion

This study contributes to empirical research in the emerging educational field of heutagogy. Adopting a heutagogical approach to learning design and delivery contributes to the development of the self-determined learner. Learners initially resisted the freedom and flexibility within the heutagogy learning process. However, through careful scaffolding and courage in remaining true to the educational philosophy, this resistance was largely dissipated, leaving learners who demonstrated engagement with some or all of the key principles of heutagogy. Future studies could explore whether the learners remain self-determined or if they adapt to the teaching philosophy of subsequent educational experiences. This study could also be repeated in other disciplines to measure the effectiveness of this approach in developing self-determined learners across HE. It could also be used by HE policymakers to encourage much-needed change and agility across the sector, enabling and encouraging learner-centred teaching strategies to flourish, resulting in empowered, self-determined graduates of the future.

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