

2025-7

A Phenomenological Study on the Enabling Role of Digital Competencies in Heutagogical Learning Contexts

Jennifer Dean
jennifer.dean@tudublin.ie

Follow this and additional works at: <https://arrow.tudublin.ie/busmas>

Recommended Citation

Dean, Jennifer, "A Phenomenological Study on the Enabling Role of Digital Competencies in Heutagogical Learning Contexts" (2025). *Masters*. 33.
<https://arrow.tudublin.ie/busmas/33>

This Theses, Masters is brought to you for free and open access by the Business at ARROW@TU Dublin. It has been accepted for inclusion in Masters by an authorized administrator of ARROW@TU Dublin. For more information, please contact arrow.admin@tudublin.ie.



This work is licensed under a [Creative Commons Attribution-NonCommercial-Share Alike 4.0 International License](https://creativecommons.org/licenses/by-nc-sa/4.0/).

**A phenomenological study on the enabling role of digital
competencies in heutagogical learning contexts**



A thesis submitted to Technological University Dublin in partial
fulfilment of the requirements for the award of
Master of Science in Education (Digital Innovator)

by

Jennifer Dean BA, MSc

July 2025

Supervisor: Dr. Ciarán O'Leary

Declaration

I certify that this report which I now submit for examination for the award of Master of Science in Education (Digital Innovator), is entirely my own work and has not been taken from the work of others, save and to the extent that such work has been cited and acknowledged within the text of my work. This thesis was prepared according to the regulations for graduate study by research of Technological University Dublin and has not been submitted in whole or in part for another award in any other third level institution. The work reported on in this thesis conforms to the principles and requirements of Technological University Dublin's guidelines for ethics in research. Technological University Dublin has permission to keep, lend or copy this thesis in whole or in part, on condition that any such use of the material of the thesis be duly acknowledged.

Signature: *Jennifer Dean*

Date: 1st July 2025

Jennifer Dean

Abstract

In today's digital age, the capacity for independent, self-directed learning is essential for navigating complex and ever-changing information environments. Digital competencies play a vital role in this process, enabling learners to critically engage with, evaluate and apply information across diverse contexts while maintaining autonomy and adaptability in their learning.

This hermeneutic phenomenological study adopts a qualitative, interpretivist approach to explore the lived experiences of individuals engaged in heutagogical learning - an approach characterised by independent, self-directed learning, where individuals intentionally assume control over what, how and when they learn. Grounded in a constructivist epistemology and interpretivist ontology, the research investigates how digital competencies enable such autonomous learning within digitally mediated contexts. Data was collected through nine in-depth, semi-structured interviews conducted online, allowing for rich, reflective accounts of participants' experiences. Thematic analysis of the data revealed three key findings that provide insight into the interplay between learner autonomy, digital competencies and the capabilities of technology-rich environments. First, self-directed learning is often unconscious and driven by intrinsic motivation, with learners relying on internal determination rather than external pressures to persist. Second, both internal and external factors influence barriers and enablers to independent learning. Cognitive overload and low motivation hinder engagement, while peer support and learning communities enhance purpose and problem-solving. Third, the link between digital competencies and learner autonomy is context-dependent; digital skills, digital literacy, digital tools and digital technologies can boost independence, but they are not always essential, as some learners demonstrate strong autonomy through enthusiasm and critical thinking alone.

Overall, these findings demonstrate that digital competencies extend beyond technical skills, profoundly shaping learners' agency, identity and capacity for self-directed learning. The study underscores heutagogical learning as an evolving, reflective and context-driven process deeply rooted in the learner's lived experience within or outside of digital environments.

Acknowledgements

Firstly, I wish to thank all the participants of this research and those who encouraged their involvement. Without their time, cooperation and interest, the completion of this thesis would not have been possible.

My sincere gratitude to Dr. Ciarán O’Leary, my supervisor, for his advice, insight and guidance throughout this research project and thesis compilation. I am deeply thankful for his supervision during this work.

I would like to give special thanks to Programme Chair and Coordinator, Edel Gallagher in Learning, Teaching and Assessment, for providing structure, valuable feedback and support throughout this process.

Finally, the deepest appreciation goes to my family—my husband, Eric and our two wonderful sons, Harry and Edward. Your unwavering support, boundless patience and constant encouragement have been the foundation of my journey on this programme of study. Thank you for always cheering me on and reminding me of the importance of perseverance, determination and commitment.

Table of Contents

Declaration	i
Abstract	ii
Acknowledgements.....	iii
Table of Contents	iv
List of Tables	vii
List of Figures	viii
Glossary	ix
List of Acronyms	xv
Chapter One: Introduction	1
1.1 Introduction	1
1.2 Research Context	2
1.3 Research Rationale.....	3
1.4 Research Aims and Objectives	4
1.5 Research Questions.....	4
1.6 Chapter Summary	5
Chapter Two: Literature Review	6
2.1 Introduction	6
2.2 Literature Analysis Approach	6
2.3 Educational Methods.....	7
2.4 Learning Theories	8
2.5 From Pedagogy to Andragogy	9
2.6 The Foundational Principles of Heutagogy.....	11
2.7 Challenges Towards Heutagogy	13
2.8 Heutagogy in the 21 st Century.....	15
2.9 Digital Competency, Digital Literacy and Digital Skills	16
2.10 Connecting Digital Competencies and Heutagogy	17
2.11 Chapter Summary	21
Chapter 3: Research Design	22
3.1 Introduction	22
3.2 Dissertation Timeline.....	22
3.3 Ethics and Research Integrity	23
3.4 Theoretical Perspective.....	23
3.5 Methodology.....	24
3.6 Philosophical Perspectives of Phenomenology.....	25
3.7 Methods	26
3.7.1 Data Collection Methods Considered	27

3.7.2 Interviews as a Data Collection Method.....	27
3.8 Delimitations, Validity and Reliability	28
3.8.1 Delimitations	28
3.8.2 Validity and Reliability	28
3.9 Commencing the Data Collection Process	29
3.9.1 Limited Literature on Participant Recruitment Practices	29
3.9.2 Recruitment Strategies	30
3.10 Employing Interviews for Data Collection	31
3.11 Interview Schedule Design.....	32
3.12 Profile of Participants	35
3.13 Thematic Analysis as a Central Framework.....	36
3.14 Commencing the Data Analysis Process	37
3.15 Chapter Summary	39
Chapter 4: Data Analysis and Presentation of Findings.....	40
4.1 Introduction	40
4.2 The Process of Thematic Analysis	40
4.2.1 Phase One: Data Familiarisation	41
4.2.2 Phase Two: Generating Initial Codes	43
4.2.3 Phase Three: Generating Themes	45
4.2.4 Phase Four: Review of Potential Themes.....	48
4.2.5 Phase Five: Defining and Naming Themes	50
4.2.6 Phase Six: Producing the Report.....	56
4.3 Findings Overview.....	56
4.4 Finding One: Core Elements of Heutagogical Learning	59
4.5 Finding Two: Barriers and Enablers to Heutagogical Learning	63
4.6 Finding Three: Interdependence Through Mutual Influence.....	70
4.7 Findings Synopsis	74
4.8 Chapter Summary	75
Chapter 5: Discussion of Findings	76
5.1 Introduction	76
5.2 Multi-faceted Nature of Heutagogical Learning	76
5.3 Phenomenological Insights on Heutagogical Learning.....	77
5.4 Technological and Psychological Barriers and Enablers.....	78
5.5 Mediating Role of Digital Tools and Technology in Learning Efficacy	79
5.6 Competency, Usability and Transformative Capability	80
5.7 Resonance Between Digital Competencies and Learner Autonomy	80
5.8 Chapter Summary	81

Chapter 6: Conclusions	82
6.1 Introduction	82
6.2 Conclusions.....	82
6.3 Recommendations	83
6.4 Implications For Future Research	85
6.5 Reflection	86
6.6 Concluding Remarks	87
References	88
Appendix A: Keyword Search List.....	125
Appendix B: Ethics Committee Approval	126
Appendix C: Participant Information Sheet	127
Appendix D: Participant Consent Form.....	130
Appendix E: Interview Invitation Email.....	131
Appendix F: Interview Schedule	132

List of Tables

Table 1: Comparison of descriptive and interpretive phenomenology	25
---	----

List of Figures

Figure 1: Progression from pedagogy to andragogy then to heutagogy.	10
Figure 2: Dissertation timeline stages.....	22
Figure 3: Participant distribution by recruitment source.	31
Figure 4: Interview schedule sections and research question(s) matrix.....	33
Figure 5: Duration of interview sessions.	34
Figure 6: Gender of participants.	35
Figure 7: Study level of participants.....	35
Figure 8: Mode of study of participants.....	36
Figure 9: Six-phases of thematic analysis.	38
Figure 10: Comments on emerging themes and codes from transcripts.....	44
Figure 11: Tracking, coding and theme identification.....	45
Figure 12: Refining themes: iterative code analysis pre-consolidation.	46
Figure 13: Refining themes: iterative code analysis post-consolidation.....	47
Figure 14: Theme and code generation pre-refinement.....	49
Figure 15: Theme and code generation post-refinement.	50
Figure 16: Dual-level thematic analysis of a theme within a thematic map.	51
Figure 17: Findings overview	57
Figure 18: Finding One: core elements of heutagogical learning.....	61
Figure 19: Finding Two: barriers in heutagogical learning	64
Figure 20: Finding Two: enablers in heutagogical learning.....	66
Figure 21: Finding Three: interdependence through mutual influence.....	70
Figure 22: Summary of findings	74

Glossary

Term	Definition
Active Listening	It involves striving for empathy and understanding, focusing not just on hearing but fully comprehending the message, without passing judgment on the speaker (Rost & Wilson, 2013).
Andragogy	A teaching approach for adults emphasising self-directed learning, life experience and practical applications (University of Illinois Springfield, 2024).
Applicability	Consideration is given to whether findings can be applied to other contexts, settings or groups (Noble & Smith, 2015).
Boolean Operators	Search strategies that combine with keywords to produce more effective search results than sentences, such as AND, OR and NOT (Guilfoyle, 2024).
Bracketing	See Epoche.
Case Study	A case study is an empirical inquiry that investigates a contemporary phenomenon within its real-life context (Yin, 2018).
Code of Ethics	The ethical rules and principles drafted by professional associations that govern scholarly research in the disciplines (Creswell & Creswell, 2018).
Consistency	Clear, transparent methods and a documented decision trail, allowing independent researchers to reach similar findings (Noble & Smith, 2015).
Constructivism	Claims that meaning does not exist in its own right, rather it is constructed by human beings as they interact and engage in interpretation (O'Leary, 2004).
Descriptive Phenomenology	See Transcendental Phenomenology.

Digital Competency	The confident, critical and responsible use of digital technologies for learning, work and societal participation (European Commission, 2024).
Digital Literacy	The ability to effectively use digital technologies to access, evaluate, create and communicate information safely (UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, 2024a).
Digital Skills	A range of skills to use digital devices, apps and networks for accessing and managing information (UNESCO-UNEVOC International Centre for Technical and Vocational Education and Training, 2024b).
Double-loop Learning	A learning process where people not only correct mistakes but also reflect on and change the beliefs or rules that led to the problem (Argyris & Schön, 1978).
Epistemology	The branch of philosophy concerned with the nature, sources and limits of knowledge, exploring how we know what we know and the justification of beliefs (Grix, 2002).
Epoche	A Greek term meaning to refrain from judgment, refers to bracketing or suspending biases in phenomenological research to approach a phenomenon with openness and neutrality (Moustakas, 1994).
Essence	Refers to the core meaning or fundamental nature of an experience as perceived and shared by individuals in a phenomenological study (Moustakas, 1994).
Ethnography	Exploration of cultural groups in a bid to understand, describe and interpret a way of life from the point of view of participants (O'Leary, 2004).
Gatekeeper	Individuals who have the power or influence to grant or refuse access to a field or research setting (Lune & Berg, 2016).
Generalisability	The transferability of the findings to other settings and applicability in other contexts (Noble & Smith, 2015).

Grounded Theory	A qualitative research method that involves developing theories based on data collected from real-world observations, rather than testing existing theories (Creswell, 1998).
Hermeneutic Circle	A reflective process of reading, interpreting and revisiting data to deepen understanding (van Manen, 1997).
Hermeneutic Phenomenology	The process of interpreting texts, language or other forms of communication from the perspective of an observer to uncover deeper meanings and enhance understanding by focusing on how people make sense of their experiences (Webb & Pollard, 2006).
Heutagogy	A learner-centred approach where individuals take full responsibility for setting goals, methods and adapting to challenges (University of Illinois Springfield, 2024).
Humanistic Education	A learner-centred approach focusing on personal growth, self-actualisation and the development of individual potential (Maslow, 1943).
Informed Consent Document	A document which participants sign before they engage in research and acknowledges that participants' rights will be protected during data collection (Creswell & Creswell, 2018).
Interpretative Phenomenology	See Hermeneutic Phenomenology.
Interpretivism	Emphasises understanding the social world from the perspective of the individuals involved, exploring how people create, interpret and give meaning to their experiences (Thomas, 2009).
Interviews	Asking questions and listening to individuals in order to obtain information or opinions (O'Leary, 2004).
Learner Agency	The ability of learners to intentionally influence their learning through planning, anticipating outcomes, self-regulation and reflective thinking (Bandura, 2001).

Learner Autonomy	The capacity of learners to take responsibility for their own learning, including setting goals, managing progress and reflecting on their learning process (Blaschke et al., 2014).
Learning Theory	A framework explaining how individuals acquire, process and retain knowledge, guiding effective teaching strategies (Olson & Ramirez, 2020).
Lived Experience	Term used in phenomenological studies to emphasise the importance of individual experiences of people as conscious human beings (Moustakas, 1994).
Mediator	An individual who leverages their formal or informal position and relationships to connect researchers with potential informants (Kristensen & Ravn, 2015).
Metacognition	Awareness and regulation of one's own thinking and learning processes (Hase & Kenyon, 2000).
Mixed Methods	A research approach that combines both qualitative and quantitative methods to provide a comprehensive understanding of a phenomenon by integrating numerical data with personal insights (Creswell & Plano Clark, 2007).
Neutrality (or Confirmability)	Ensured when truth value, consistency and applicability are met, recognising the researcher's influence and differentiating it from participants' accounts (Noble & Smith, 2015).
Non-Linear Learning	A flexible learning process that allows exploration and discovery without following a fixed sequence (Hase & Kenyon, 2000).
Ontology	The study of being, existence and the nature of reality. It examines what entities exist, how they are categorised and how they relate to each other (Edelheim, 2014).
Orthographic Transcription	A style of audio transcription, also known as verbatim, which focuses on transcribing spoken words and other sounds in recorded data (Braun & Clarke, 2013).

Paradigm	A fix set of assumptions, thinking habits, rules of procedure or shared ideas in a particular community of inquiry (Kuhn, 2012).
Paralinguistic	Refers to the non-verbal elements of communication that accompany speech and help convey meaning, emotion and intent (Braun & Clarke, 2013).
Pedagogy	The method and practice of teaching, particularly in relation to children or young learners (University of Illinois Springfield, 2024).
Phenomenological Study	A qualitative approach that explores how individuals experience and perceive a specific phenomenon, aiming to uncover its essence and meaning through their lived realities (Moustakas, 1994).
Phenomenon	The concept being experienced by subjects in a phenomenological study (Creswell, 1998).
Positivism	Knowledge of the social and psychological world can be objectively observed, measured and studied scientifically (Thomas, 2009).
Qualitative Data	Data collected as words and/or images, not numerically coded for analysis (O'Leary, 2004).
Quantitative Data	Numerical data, can be naturally occurring numbers (e.g. age, income) or numerically coded (e.g. 1 = Female, 2 = Male (O'Leary, 2004).
Reflective Practice	The process of evaluating and learning from one's experiences to improve future actions and decisions (Blaschke et al., 2014).
Reliability	The consistency of the analytical procedures, including accounting for personal and research method biases that may have influenced the findings (Noble & Smith, 2015).
Rigour	An application of goodness in the research process as a means of reflecting situatedness, trustworthiness and authenticity (G. Tobin & Begley, 2004).

Sampling Plan	A formal plan specifying a sampling method, a sample size and procedure for recruiting participants (Moser & Korstjens, 2017).
Self-Efficacy	A person's belief in their ability to succeed in tasks and overcome challenges, influencing motivation and behaviour (Bandura, 1997).
Situatedness	The idea that the mind is deeply connected to its environmental, social and cultural factors, shaping how we think and function (Heidegger, 1962).
Snowballing	A recruitment method where participants refer others through their social networks (Goodman, 2011).
Subjectivism	Emphasises the subject elements in experience and accepts that personal experiences are the foundation for factual knowledge (O'Leary, 2004).
Surveys	A method of questioning or canvassing a wide array of people in order to obtain information or opinions (O'Leary, 2004).
Thematic Analysis	The process of identifying patterns or themes within qualitative data (Braun & Clarke, 2006).
Transcendental Phenomenology	Focuses on exploring individuals' lived experiences while setting aside the researcher's biases through bracketing (epoche) to uncover the universal essence of the phenomenon (Moustakas, 1994).
Trustworthiness	Relates to the credibility by which research methods have been undertaken (Noble & Smith, 2015).
Validity	The precision in which the findings accurately reflect the data (Noble & Smith, 2015).
Worldview	A perspective through which individuals interpret and understand the world, shaped by their beliefs, values and experiences (Creswell & Plano Clark, 2007).

List of Acronyms

Abbreviation	Description
CLC	Computer Learning Centre
ERIC	Education Resources Information Centre
EU	European Commission
HE	Higher Education
HEA	Higher Education Authority
IUA	Irish Universities Association
PAH	Pedagogy – andragogy – heutagogy
SOLAS	State Agency for Further Education and Training
THEA	Technological Higher Education Association
TU Dublin	Technological University Dublin
UN	United Nations
UNESCO	United Nations Educational, Scientific and Cultural Organisation
UNEVOC	UNESCO's global network for institutions specialised in technical and vocational education and training (TVET)

Chapter One: Introduction

1.1 Introduction

Technology is constantly transforming how we work, play, create, collaborate and communicate. It is opening-up exciting new possibilities of assistive technology, virtual and augmented reality, collaborative tools, gamification, podcasting, blogging, artificial intelligence and more. In this age of rapid technological advancements and digital transformation, the role of educational technology in Higher Education has become more prominent than ever. Described by Halder and Saha (2023), “technology in education is the application of technological knowledge, devices and machines in education. In the context of education, technology includes the use of various devices like projectors, film, television, radio, internet etc” (p. 36).

The fast-paced advancement and increasing quality of digital technologies for learning, particularly in Higher Education, explains why digital learning is one of the key components of education in the twenty-first century (Almerich et al., 2020; Coker, 2020). These technologies encompass tools for accessing and studying learning materials, facilitating collaboration and communication among learners, assessing both learners and learning outcomes, supporting a hands-on learning approach and fostering the development of digital and multimedia literacy (Bergdahl et al., 2018). Educational technology emphasises the theory and practice of using new technology to apply innovative methods that can enhance independent learning and support student achievement. With adaptive learning tools, interactive platforms and digital resources, students can access content tailored to their individual needs, learning styles and pace. This approach encourages critical thinking, problem-solving and the ability to set and achieve personal learning goals. By promoting autonomy and resourcefulness, educational technology not only cultivates lifelong learning habits but also supports student achievement by creating a flexible, student-centred learning environment that adapts to evolving educational demands. There has been rapid expansion of online instruction and micro-credential certification where online courses have developed to offer a wide range of opportunities across diverse learner groups (Gleeson, 2023). These learning prospects are supported through

national organisations (SOLAS, 2024) and community organisations (An Cosán, 2025) to help learners achieve learning and skills that will contribute to individual professional and personal development.

1.2 Research Context

Continuous learning is facilitated by technology beyond the boundaries of traditional classrooms. According to Moore (1973), “independent learning and teaching is an educational system in which the learner is autonomous and separated from his teacher by space and time, so that communication is by print, electronic, or other non-human medium” (p. 663). Advances in technology and digital tools can create new opportunities for learners to have more control over how and where their learning takes place, which in turn, makes learning a continuous process (Cook & Gregory, 2018). Innovative approaches to teaching and learning have gained importance in recent years and education is constantly changing (Oke & Fernandes, 2020). Emerging online learning models challenge traditional approaches by redefining digital competence and addressing the need for global connectivity in education and beyond (Haleem et al., 2022). As technologies evolve, fostering dialogue about learner expectations and their learning stages becomes important, paving the way for self-directed learning that empowers students to guide their own educational paths (Alam & Mohanty, 2023).

Heutagogy (Hase & Kenyon, 2000) is a student-centred education approach that emphasises autonomous thought and self-directed learning. By placing the learner at the centre of the learning process and giving learners the tools to take charge of their education, heutagogy signifies a departure from conventional educational models that prioritise the role of the instructor. Rashid and Asghar (2016) pointed to the effectiveness of digital technologies in enhancing students' engagement and self-directed learning. They argue that while self-directed informal learning can occur with or without technology, technology offers access to enhanced information, social support and areas of engagement, which all contribute to enhancing learners' self-directed learning. This aligns well with heutagogical principles and fosters the type of independent, self-directed learning enabled by an emerging technological learning approach. According to Moore

(2020), “heutagogy is not time bound, which lends more flexibility to the learner and lets them further engage with their learning” (p. 6). This approach gives students a keen sense of accountability for their learning results, flexibility and critical thinking abilities. While many students may demonstrate basic digital skills, the depth and breadth of digital competency required for self-directed, independent learning success are not always well understood (Falloon, 2020; Law et al., 2018).

1.3 Research Rationale

Connolly and McGuinness (2018) address the critical need for digital literacy among young people in today's technology-driven society and highlight the need for young people to acquire additional skills to engage meaningfully in the digital world. Digital learning offers a higher degree of freedom for the learner, especially in online spaces and these opportunities demonstrate that digital learning environments facilitate new approaches to knowledge development, incorporating contributors beyond traditional academic institutions (Bygstad et al., 2022). Research by Thompson, Pawson and Evans (2021) suggest that while some learners embrace the freedom during independent learning, some felt overwhelmed and anxious, having a sense of unpreparedness and were unsure about what was expected of them. A potential cause could be an overall lack of guidance on how to learn independently and use technologies during independent learning. Some learners lack the experience of independent learning and therefore prefer to learn in traditional ways (Noskova et al., 2021). Existing research indicates opportunities for investigating new ways of learning and creating learning environments that fit today's digital, networked society (Ackoski & Karovska Andonovska, 2019) and further exploration into use of heutagogy for developing self-directed and lifelong learning skills (Blaschke, 2021). Understanding how digital competency contributes to the enhancement of self-directed learning experiences can reveal the impact on learners' ability to engage with autonomous learning. By examining this through a phenomenological lens, which focuses on individuals' lived experience of a phenomenon (Moustakas, 1994), valuable insights into optimising digital technologies, tools and skills in support of autonomous, self-directed learning, can be gained.

1.4 Research Aims and Objectives

This research aims to investigate the relationship between digital competency and in heutagogical learning contexts, with a focus on how digital literacy, technology and skills may influence learners' capacity to engage in independent, self-directed learning. Rather than assuming a predetermined outcome, the study seeks to explore how digital tools and resources might support the personalisation of learning, enabling learners to access information autonomously and tailor their learning in terms of content, pace and method to suit their individual needs and preferences. Employing a phenomenological approach, this study examines the lived experiences of individuals to gain deeper insight into how they perceive and engage with digital competencies in the context of heutagogical or independent, self-directed learning.

1.5 Research Questions

This phenomenological study on heutagogical learning and digital competencies centres around the primary research question:

How do digital competencies contribute to the enhancement of independent learning experiences and how can the impact of digital competencies on learners' ability to engage in self-directed learning be understood?

The research question is broken down into four sub-questions, as follows:

- 1 To what extent do learners perceive their digital literacy skills as essential for success in self-directed learning tasks?
- 2 Which digital literacies are most essential for learners in independent, self-directed learning environments?
- 3 How do varying levels of digital literacy influence learners' confidence in navigating independent learning tasks?
- 4 What difficulties might learners face when using digital technologies or tools for independent, self-directed learning and how do they successfully address these challenges?

Within the heutagogical, self-directed learning framework, which emphasises learner autonomy, self-reflection and self-directed learning, the research question(s) investigate how digital tools, skills and technologies shape these processes and how learners develop and apply digital competencies in support of their learning journeys. By examining these dimensions, the research question(s) aim to uncover the interplay between autonomy, motivation, choice and the development of key digital competencies in heutagogical learning.

1.6 Chapter Summary

Informed by heutagogical principles, this study places emphasis on the learner's capacity for autonomy, self-direction and reflective engagement, particularly within digitally mediated environments. The research questions centre on understanding how digital competencies enable integration into learners' heutagogical learning processes and how these elements interact with motivation, choice and control.

To contextualise these questions, the following literature review chapter explores existing research and theoretical perspectives on self-directed learning, digital competence and the evolving relationship between learners and digital technologies. This provides a foundation for understanding the broader context surrounding independent learning in contemporary, digitally influenced learning settings.

Chapter Two: Literature Review

2.1 Introduction

A literature review synthesises relevant studies, theories and methodologies, providing a comprehensive overview of what is known and highlighting trends, conflicts and opportunities for further investigation (Ridley, 2012). This literature review adopts a thematic approach, drawing on a range of scholarly sources to explore key concepts relevant to learning and digital capability. It begins by examining the theoretical foundations of traditional pedagogical methods, which emphasise structured teaching strategies in classroom settings. The review then considers how these methods relate to andragogy, which promotes self-directed learning for adults and heutagogy, which extends this to self-directed learning with greater learner autonomy. Building on these foundations, the review explores digital competency, skills and literacy, highlighting digital literacy as a critical enabler of independent learning while also acknowledging associated challenges and potential biases.

2.2 Literature Analysis Approach

Establishing clear study boundaries early is essential (Snyder, 2019), supported by strategies such as guiding questions (Bell & Waters, 2018) and managing workload and search depth (Thomas, 2009). Common pitfalls include outdated sources and prioritising quantity over quality, especially under time pressure (Aksnes et al., 2019; Snyder, 2019). O'Leary (2004) highlights the challenge of balancing purpose, structure and argument in literature reviews. This review focused on qualitative studies related to digital literacy, autonomy, competency and self-directed learning, prioritising recent work while including foundational texts. Sources were selected based on relevance and citation counts, using diverse databases (ARROW, 2025; Emerald Insight, 2025; ERIC - Education Resources Information Center, 2025; ResearchGate GmbH, 2025) and journals (Educational Review Journal, 2025; Oxford Academic, 2024; SAGE Journals, 2025), with Boolean operators and keyword searches, as shown in Appendix A. Screening of abstracts, full-text reviews and citation tracking refined the selection. Zotero (2025) facilitated efficient article management and citation organisation.

2.3 Educational Methods

Education plays a crucial role in shaping society by equipping individuals with the knowledge, skills and competencies to meet the needs and thrive in a rapidly changing world (Amhag et al., 2019; Ballantine et al., 2021; Succi & Canovi, 2020). González-Pérez and Ramírez-Montoya state (2022) “improving the integral training of individuals and promoting quality of life in society should be the primary objectives of education” (p. 1). As societal demands have shifted and the needs of learners have evolved, traditional approaches to education have been reassessed and transformed, bringing a significant evolution in teaching methods, learning approaches and the theoretical frameworks that underpin them (Morris, 2019). This transformation highlights the shift towards more flexible, personalised and effective learning strategies that better address the diverse needs of today’s learners.

Traditionally, education focused on passive learning and teacher-centred methods, where instruction was primarily led by the teacher and learning emphasised rote memorisation, with the teacher serving as the main source of knowledge (Altun, 2023). Teaching methods encompass a wide array of approaches used by educators to facilitate learning and help learners achieve educational objectives. These methods are shaped by factors such as the subject matter, the goals of instruction, the learners' needs and the context in which learning occurs (Brown & Green, 2016). The different types of teaching methods can be broadly categorised into several key types, each serving distinct purposes and catering to different educational scenarios:

- **teacher-centred** - a traditional approach where the teacher leads and controls the learning process, focusing on instruction and guidance (Garrett, 2008).
- **student-centred** - the teacher guides, while focusing on the learner’s needs to promote critical thinking, problem-solving and independence (Garrett, 2008).
- **content-focused** - a conventional approach where the teacher delivers knowledge and students learn through listening, note-taking and assignments (Mladenovici et al., 2022).

- **interactive/participative** – this method focuses on active student-teacher interaction, promoting collaboration and engagement for deeper understanding (Tuma, 2021).

Learning can be categorised in various ways, with Bloom's (1956) widely used framework identifying three domains: cognitive, affective and psychomotor, linking mental functions to physical movement. Gagné et al. (1992) suggested a broader classification of learning, which included intellectual skills, cognitive strategies, verbal information, attitudes and motor skills. These classifications aimed to help tutors select suitable teaching strategies by linking different learning types to specific instructional methods.

2.4 Learning Theories

Learning theories explain how individuals acquire, retain and apply knowledge (Olson & Ramirez, 2020). Learning theories provide insight into the learning process, learner motivation and effective teaching strategies, focusing on how people process information, make connections and apply knowledge in various contexts (Munna & Kalam, 2021). Prominent learning theories provide varied perspectives on cognition, behaviour and environment, with key categories including:

- **behaviourism** (Skinner, 1938) whereby learning is a response to stimulus and that conditioning can dictate desired outcomes in behaviour
- **cognitivism** (Piaget, 1926) proposes that learners are not passive receivers of stimuli, rather, the mind actively processes the information it receives and converts it into new forms and categories
- **constructivism** (Bruner, 1974) advocates learning is an active process in which learners construct new ideas or concepts based upon their current/past knowledge, social interactions and motivation.
- **humanistic** (Maslow, 1943; Rogers, 1961) which focuses on the learner as a whole, considering not just intellect but also personal interests, goals and enthusiasm to help them reach their full potential.

Each of these theories has influenced teaching methods and continues to shape how educators design learning experiences to meet the evolving needs of learners (Crompton et al., 2020). Learning can be approached in many ways, with each method reflecting different philosophies, techniques, conditions, characteristics and strategies to enhance understanding, engagement and skill development (Dunlosky et al., 2013). Pedagogy andragogy and heutagogy represent three distinct styles to learning, each addressing the needs and autonomy of learners at different stages.

2.5 From Pedagogy to Andragogy

The word pedagogy originates from the ancient Greek word *paidagogos*, 'paidos' (child) and 'agogos' (leader). Pedagogy is the science and art of teaching (Tirri & Toom, 2020), encompassing principles and practices that are rooted in theories like behaviourism (Skinner, 1938), cognitivism (Piaget, 1926) and constructivism (Bruner, 1974), essential for creating effective, meaningful and impactful learning experiences. Shown as Level One of traditional pedagogy in Figure 1, instructors maintain full control over the learning process, aiming to motivate students to engage with the content by setting clear instructional goals, learning objectives and activities along a structured, linear path (Blaschke & Hase, 2019). As learners become less dependent upon the instructor for guidance and structure within the pedagogical learning process, they can advance through the continuum to more autonomous and less structured learning environments (Blaschke et al., 2014). At Level Two of the continuum in Figure 1, andragogy emphasises the instructor's role as the primary facilitator in the learning process, continuing to scaffold and construct the learning experience, while allowing a higher degree of learner autonomy.

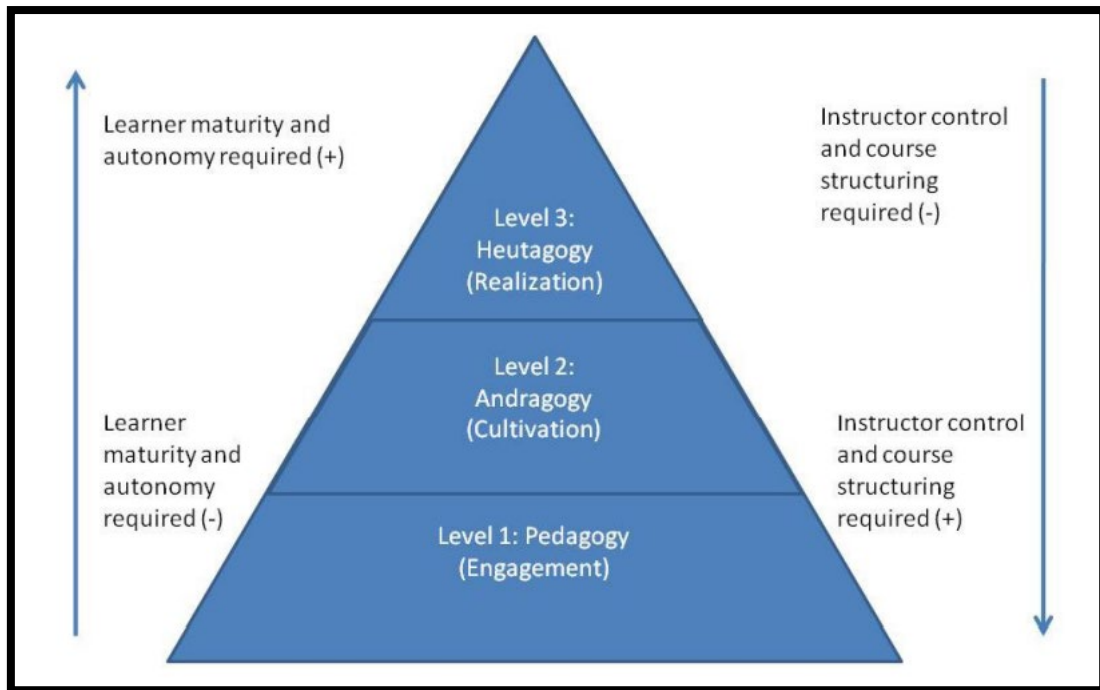


Figure 1: Progression from pedagogy to andragogy then to heutagogy.

Source: (Blaschke, 2012, p. 60 based on Canning, 2010, p. 63)

Derived from Greek, 'anere' (man) and 'agogus' (leading), the term andragogy (Knowles, 1975) refers to the theory of adult learning and represents a move from dependency of teacher-led learning and towards self-direction of learning as adults. Knowles (1975) defined andragogy as:

A process in which individuals take the initiative, with or without the help of others, in diagnosing their learning needs, formulating learning goals, identifying human and material resources for learning, choosing and implementing learning strategies and evaluating learning outcomes. (p. 18)

Knowles' (1975) ideas are based on the view that the more mature a learner becomes, the more self-directed the learner will be in their own learning. In the andragogical approach (Knowles, 1980), the instructor begins to focus on developing the learner's capacity for self-directed learning, granting greater freedom in determining how learning takes place and incorporating less structure into course design and applying knowledge to real-life contexts. Similar to

humanism (Maslow, 1943; Rogers, 1961), andragogy, “assumes that learners are motivated by internal incentives, such as the need for esteem (especially self-esteem), the desire to achieve, the urge to grow, the satisfaction of accomplishment, the need to know something specific and curiosity” (Knowles, 1975, p. 21). In both pedagogy and andragogy, the instructional focus centres on the dissemination of content and learning, which follows a linear approach with instructor-defined outcomes.

At Level Three in Figure 1, heutagogy represents a progression from pedagogy to andragogy and ultimately to heutagogy forming the pedagogy-andragogy-heutagogy (PAH) continuum, where learners advance in both maturity and autonomy (Blaschke, 2012; Canning, 2010). Heutagogy enables learners to take full control of their learning, granting them complete autonomy in determining their learning methods (Blaschke & Hase, 2019) and the development of self-directed learners who can tackle the complexity of real-world problems (Luckin et al., 2010).

2.6 The Foundational Principles of Heutagogy

The term heutagogy comes from the Greek words ‘heutos’ (self) and ‘agogos’ (leading). Heutagogy was developed as an extension to andragogy (Hase & Kenyon, 2000) to describe an educational strategy that stresses learners' self-determination to learning and builds on established learner-centred education theories that strongly emphasise learner autonomy. The key principles of heutagogy - learner agency, self-efficacy and capability, reflection, metacognition and non-linear learning - applies a holistic approach to developing learner capabilities with the learner serving as “the major agent in their own learning, which occurs, as a result of personal experience” (Hase & Kenyon, 2007, p. 112). Heutagogy enables learners to take charge of their learning, unlike traditional pedagogy which centres on the instructor and andragogy which emphasises learner-driven education within a set curriculum (Blaschke, 2012; Luckin et al., 2010).

In self-directed learning, learners have the autonomy to choose both what they will learn and how they will learn it, gaining full control over their learning environment, content and process. (Luckin et al., 2010) state:

The value in a pedagogic approach is in developing the learner's understanding of a subject. The value in an andragogic approach is in developing an understanding of how to negotiate a way through the learning process. The value in a heutagogical approach is in developing the understanding that you are empowered to look at the learning context afresh and take decisions in that context. (p. 10)

Central to this theory is the learner agency and the ability of the learner to choose their own pathway to learning, where “the power to learn is firmly in the hands of the learner and not the teacher” (Hase & Kenyon, 2013, p. 20). Learner agency, reflective practice and double-loop learning lies at the heart of heutagogy, shaping and influencing every aspect of the theory (Argyris & Schön, 1978; Blaschke, 2012; R. L. Moore, 2020). The concept of human agency is fundamental to independent, self-directed learning (Blaschke et al., 2014). Heutagogy, which positions the learner at the centre of the educational process, aligns closely with humanistic educational principles (Maslow, 1943) emphasising the learner's role as the primary agent in their own development. Bandura (2001) defines agency as follows:

To be an agent is to intentionally make things happen by one's actions. Agency embodies the endowments, belief systems, self-regulatory capabilities and distributed structures and functions through which personal influence is exercised, rather than residing as a discrete entity in a particular place. (p. 2)

Bandura (2001) outlines four core components of human agency: **intentionality**, the ability to plan and commit to future actions; **forethought**, the capacity to anticipate and evaluate possible outcomes; **self-reactiveness**, which involves regulating behaviour through self-guidance and a sense of efficacy; and **self-**

reflectiveness, the ability to critically assess one's actions, their impact and underlying meaning. This alignment with the principles of heutagogy, underscores the relevance of agency in fostering self-directed learning, where learners are empowered to take ownership of their educational journeys through active engagement, critical thinking and personal responsibility (Hase & Kenyon, 2000).

Heutagogy (Hase & Kenyon, 2000) draws on double-loop learning (Argyris & Schön, 1978) and constructivist theories (Bruner, 1974), emphasising that learners actively construct meaning from experience (Bruner, 1960, 1974; Vygotsky, 1978). Heutagogy (Hase & Kenyon, 2000) goes beyond knowledge acquisition to focus on developing key competencies such as creativity, self-confidence and reflective thinking. By encouraging learners to reflect on their personal growth and adapt their approaches from problem to action to solution (Hase, 2009), heutagogy (Hase & Kenyon, 2000) fosters flexibility, autonomy and critical thinking (D'Souza, 2024).

Glassner and Back (2020) suggested that self-directed learning does not necessarily follow a linear path to achieve goals such as completing tasks, mastering subjects or solving problems. In contrast, Blaschke et al. (2014) highlight the importance of metacognition and reflection in enabling learners to assess, refine and internalise the processes of self-directed learning, including taking action, evaluating outcomes and making informed decisions, often fostering innovative thinking and problem-solving. With the right support, learners can embody key heutagogical principles, such as non-linear learning, capability, reflection and metacognition (Gillaspy & Vasilica, 2021), which are crucial for successfully navigating complex and dynamic learning environments.

2.7 Challenges Towards Heutagogy

Despite its potential to promote self-directed learning, autonomy, adaptability and critical thinking skills, heutagogy comes with its own set of challenges that can impact its effective application. van der Walt (2019) noted that unclear definitions of the heutagogical concept have led to challenges in effectively communicating

about self-directed learning. According to Candy (1991), self-direction is an outcome of the interaction between a person and the environment.

Candy (1991) suggests the focus on autonomy has limited the understanding of self-directed learning, leading to a mismatch when utilising it in an educational environment. Candy (1991) highlights one important dimension: learner control in informal settings, where individuals independently decide what, how, when and where to learn, as well as how to evaluate their progress. However, Loeng (2020) argues that this autonomy is meaningless if learners lack the skills or self-belief to take advantage of it. Garrison (1992) adds that self-directed learning is not about total independence but exists on a spectrum, depending on both the learner's capability and the available opportunities. Critically, Loeng (2020) and Garrison (1992) caution against viewing self-direction as merely freedom from external control, since learning is inherently social and interdependent, that knowledge is shaped by interactions with others and the broader learning environment, stating "we live interdependently and knowledge is socially determined" (1992, p. 141).

Research supports the idea that active engagement in learning leads to better outcomes. Knowles (1975) maintained that people who take the initiative in learning, that is, actively engaging and making decisions about their educational journey, tend to learn more deeply and retain information better than those who are simply passive recipients of instruction. This idea is further supported by Paechter, Maier and Macher (2010), who found that students who utilised self-paced and collaborative learning opportunities not only increased their understanding but also demonstrated greater overall success in their learning experiences. The individual's ability to self-direct is of great importance to the society, working life and self-development (Loeng, 2020). Such findings emphasise the importance of learner autonomy and engagement in achieving optimal educational outcomes.

2.8 Heutagogy in the 21st Century

Hase and Kenyon (2000) distinguished between andragogy (Knowles, 1975) and heutagogy by highlighting that while both approaches focus on the learner's interests, self-directed learning goes further by stressing the importance of “recognising the changed world in which we live” (p. 2). Heutagogy acknowledges “learning as being an extremely dynamic experience occurring in a world that was (and is) highly complex, non-linear and ever-changing” (Hase, 2009, p. 43). Research suggests that heutagogy acknowledges and endeavours to include the distinct experiences of learners in the educational process, fostering deeper learning and is particularly well-suited to the development of aptitudes needed for the 21st-century workplace, including adaptability, critical thinking and problem-solving (Blaschke, 2012; Carpenter & Green, 2017). Heutagogy draws special attention to the future in which the learner’s knowledge on how to learn will one day transform into a vital skill due to the rapidly advancing technology, community structures as well as workplaces according to Kenyon and Hase (2001). Reinforcing this perspective, Advance Higher Education (2024b) emphasises heutagogy as “the importance of knowing how to learn as a key skill for the 21st century”, underscoring that learning how to learn will be crucial due to rapid innovation and changing workplace dynamics.

Heutagogy allows students to grow, adapt and thrive in a knowledge society that constantly changes as the world changes (D’Souza, 2024). Students are frequently required to engage in independent learning by utilising online resources, technologies and tools (Matias & Wolf, 2013). As education shifts to digital and hybrid models, these competencies are vital factors in fostering independent learning (Núñez-Canal et al., 2022). Self-directed learning is a multi-layered concept that should not be approached through one perspective (Loeng, 2020). The advancement of heutagogy is closely aligned with the growth of digital and social media which encourages user-generated content, exploration, creativity, reflection and networking with the potential for creating the digital self-determined learner (Gerstein, 2014). Consistent with Beetham and Sharpe (2019), digital technology is not only facilitating interactions between tutors and

learners, but it also augments, as well as transforms, the teaching and learning process.

2.9 Digital Competency, Digital Literacy and Digital Skills

Technology plays a crucial role in modern education by providing access to a vast array of digital resources, online courses and interactive learning platforms (Abdulrahman et al., 2020; Alam & Mohanty, 2023). Technology-enabled learning is likely to be part of this continuous or lifelong learning, learning beyond the Higher Education experience (Lock et al., 2021). With the support of digital technologies, self-directed learning highlights the notion of non-linear learning in which learning can take place virtually at anytime and anywhere (Blaschke & Hase, 2015). 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, 2003). From a wider perspective, the critical need for digital literacy development in Higher Education is evident through the strategic priorities expressed by the highest levels of governance, both nationally (Government of Ireland, 2024) and internationally (European Commission: Directorate-General for Communications Networks, Content and Technology, 2024) to set out comprehensive strategies to support technology-use and digital competence development in education and learning.

A variety of digital competencies are essential for effective participation in daily life, the workplace and civic activities within society (Spante et al., 2018; Vuorikari et al., 2022). A proliferation of definitions around digital competence and digital literacy has emerged with variant terms and different nomenclature used (Ilomäki et al., 2016; Spante et al., 2018). The European Commission (2019) identified eight key competences for lifelong learning essential to citizens for personal fulfilment, a healthy and sustainable lifestyle, employability, active citizenship and social inclusion. Digital competency was identified as one of these competencies and is defined by the European Commission (2019) as follows:

Digital competence involves the confident, critical and responsible use of and engagement with digital technologies for learning, at work and for

participation in society. It includes information and data literacy, communication and collaboration, media literacy, digital content creation (including programming), safety (including digital well-being and competences related to cybersecurity), intellectual property related questions, problem solving and critical thinking. (p. 10)

Digital competency, encompassing digital skills and digital literacy, plays a vital role in enabling successful independent learning by fostering learner engagement, motivation and persistence, particularly as learners take greater responsibility for their learning compared to traditional tutor-led environments (Scheel et al., 2022). Digital skills, as defined by United Nations Educational, Scientific and Cultural Organisation (2009), refer to the ability to use digital devices and communication tools to access, manage and share information. Digital literacy builds on these foundational skills, involving the capacity to apply digital technologies effectively and critically within specific contexts (Jones & Hafner, 2012). Together, these competencies are essential for navigating digital environments in education, work and daily life. According to Advance Higher Education (2024a), students who develop digital literacies as a core part of their learning tend to study more effectively and are better prepared for employment upon graduation. In the context of heutagogical learning, these digital competencies become even more important, as learners traverse complex digital environments independently. Traditional forms of education delivery that are content driven and teacher led are not flexible or personalised enough to meet the diverse needs of learners (Lock et al., 2021). The relationship between digital competencies and independent learning could be considered challenging, signifying “students must possess adequate literacy skills to be educated in the digital age” (Mannan et al., 2023, p. 4).

2.10 Connecting Digital Competencies and Heutagogy

Building digital capacity is more than developing a capacity for online course provision and the use of digital tools (Whitelock et al., 2024). It is about developing new ways of dealing with information, working and learning in a digital environment, using time and information differently and developing new versatility

when it comes to interaction in learning environments (Department of Enterprise, Trade and Employment, 2023).

By integrating heutagogical practices with digital technologies, educational organisations can better prepare learners of all kinds for success in a competitive global workforce while also fostering lifelong learning (Blaschke, 2012). This approach not only supports the development of adaptable, self-directed learners but also enhances motivation, as learners become more engaged in their studies by making choices that are personally relevant and meaningful - an outcome highlighted by Kenyon and Hase (2010), who note that learners are “fully engaged in the topic they are studying because they are making choices that are most relevant or interesting to them” (p. 170). For higher education students, developing digital competencies and skills enhances their value to future employers and appeal in the graduate labour market (World Economic Forum, 2023). Amid unprecedented global challenges, the need for confident and well-supported engagement with digital technology has become increasingly evident (Haleem et al., 2022). Findings from the National Forum for the Enhancement of Teaching and Learning in Higher Education’s Index Survey (2020) highlight that enhancing digital capacity and literacy is crucial to unlocking the full potential of digital transformation in Irish Higher Education, underscoring the need for comprehensive digital competencies that support personal growth, independent learning and collaboration.

Vuorikari et al. (2022) define individual digital capabilities as encompassing not only digital skills but also the ability to think critically about digital technologies, engage in creative digital production, communicate and collaborate effectively, support digital learning and development and manage digital identity and wellbeing. What it means to be digitally capable varies for each person and will depend on their specific role and discipline, as well as their personal circumstances, experience and other contextual factors (JISC, 2024). Heutagogy, with its focus on autonomy and self-directed learning, provides a valuable framework for exploring how digital tools, technologies and competencies enable learners to take ownership of their learning (Blaschke,

2012). As Martzoukou (2022) notes, digital competences are both complex and evolving, making it essential to continually engage in dialogue about what is expected of learners at different stages of their educational journey.

Research shows that young people use various digital devices to access information in educational settings (Andersson, 2022; Cranmer, 2020; Sullivan et al., 2019) and the influence of educators and classroom settings in enhancing young people's digital literacy (Connolly & McGuinness, 2018). Studies reveal that independent learning can improve critical thinking and learning outcomes (Nortvig et al., 2018). Further research has shown that digital literacy is a significant predictor of success in online and blended learning environments (Ng, 2012) and that learning activities carried out online can make it easier to learn anywhere and anytime (Islam et al., 2022). Burnett (2014) suggested in relation to the development of young people's responsible and productive technological practices, there is a greater "need for literacy provision in schools to be more aligned to literacies in everyday life" (p. 192).

The self-directed learning approach, as applied in educational activities (Lynch et al., 2021) and Watts' (2018) research on digital fluency in both global and Irish Higher Education, highlight the critical role of self-efficacy in developing digital competencies. These findings suggest that boosting confidence with digital competencies can significantly improve learning outcomes. Variations in age, location, education and work experience create diverse digital experiences and usage needs among learners, contributing to digital inequality; social science research highlights this divide by identifying two groups - the digitally enabled and the digitally excluded - based on differences in access to digital connectivity and skills (R. Moore et al., 2018). In parallel, there remained a distinction between the so-called digital natives and digital immigrants (Prensky, 2001) and the concept of young people growing up immersed in technology and being equipped with sophisticated technical skills, despite this theory having been repeatedly challenged since its publication (Bennett et al., 2008; Margaryan et al., 2011). Digital natives are often regarded as pioneers of the information society and digital economy, being seen as developing digital skills through their everyday

experiences with technology and the Internet (Reid et al., 2023; van Laar et al., 2022). However, as Bennett, Maton and Kervin (2008) stated:

There also appears to be a significant proportion of young people who do not have the levels of access or technology skills predicted by proponents of the digital native idea.... Such generalisations about a whole generation of young people thereby focus attention on technically adept students. With this comes the danger that those less interested and less able will be neglected and that the potential impact of socio-economic and cultural factors will be overlooked. (p. 7)

Modern learning trends rooted in the constructivist (Bruner, 1974) perspective include student-centred approaches that prioritise the learner and promote independent learning (Tangney, 2014). A fundamental principle of constructivism (Bruner, 1974) is its focus on diversity in learning, acknowledging the unique perspectives learners contribute based on their individual worldviews (Burns et al., 2022; Rannikmäe et al., 2020). These theories support increased autonomy, collaboration and personalised learning, reflecting a shift driven by evolving learner needs and societal change, accelerated by the push towards online and remote learning experiences during the COVID-19 pandemic (Chiu, 2022). Regarding the pandemic and education specifically, Farrell (2020) states “the pandemic forced the higher education system to swiftly shift to remote emergency teaching online” (p. 11). Across the education sector, the teaching styles utilised during the pandemic, transformed into models of hybrid teaching and learning to support the changing needs of learners (Anthony Jnr & Noel, 2021; Finlay et al., 2022). Technological advancements have revolutionised education, enabling more interactive, immersive and individualised learning experiences that cater to diverse learner needs and to better engage students and develop skills that are crucial in the 21st century (van Laar et al., 2017). This shift meets the needs of modern learners while equipping them to navigate an unpredictable future, bridging digital and non-digital experiences and promoting self-directed learning (Gillaspy & Vasilica, 2021).

2.11 Chapter Summary

The evolution of modern learning, shaped by constructivist principles and accelerated by global disruptions such as the COVID-19 pandemic, has led to the emergence of more autonomous, personalised and digitally mediated learning environments. These changes underscore the importance of learner agency, flexibility and adaptability in contemporary education. The shift toward hybrid and self-directed learning models reflects a broader transformation in how learning is experienced and facilitated, with technology acting as both a catalyst and a support mechanism.

In response to these trends, this research seeks to explore how learners navigate and experience heutagogical learning within digitally enabled contexts. The following chapter outlines the research design that guided this investigation, detailing the methodological choices, data collection strategies and ethical considerations that shaped the study.

Chapter 3: Research Design

3.1 Introduction

This chapter outlines the dissertation timeline, ethical considerations and theoretical foundation of the study, adopting a phenomenological perspective to guide the chosen methodology. The use of interviews as the primary data collection method is outlined, addressing key issues of validity, reliability and study delimitations. The chapter details recruitment strategies, challenges in participant sourcing and explains the data collection process and introduces thematic analysis as the core framework for analysing the data.

3.2 Dissertation Timeline

The dissertation followed nine key stages shown in Figure 2, with ongoing activities like ePortfolio updates, supervisor meetings, tutorials and reflective writing occurring across all stages. The process began with Stage 1, project initiation, supervisor allocation and planning. Stage 2 focused on developing research questions and selecting an appropriate methodology. Stage 3 involved the literature review and research strategy, refined through key deliverables. Stage 4 addressed ethical approval, while Stage 5 covered participant recruitment, interviews, transcription and early drafting. Stage 6 included data analysis and a second work-in-progress update. Stages 7 to 9 focused on presentation and discussion of findings, write-up and dissertation submission.

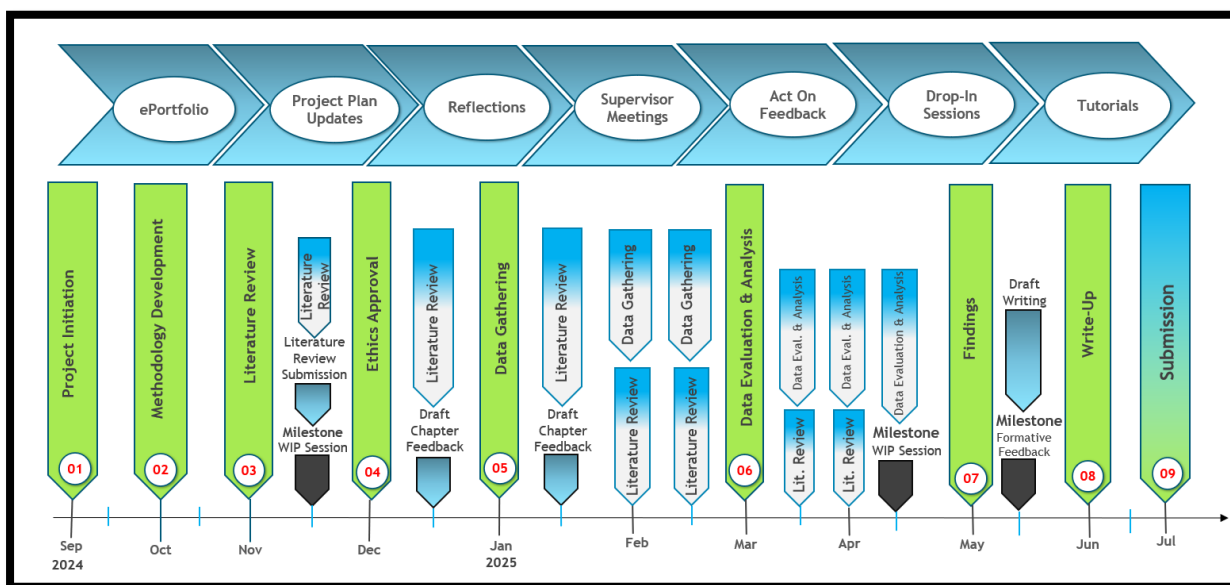


Figure 2: Dissertation timeline stages

3.3 Ethics and Research Integrity

Research integrity, grounded in ethical practice, is essential in Irish Higher Education (Higher Education Authority, 2022), ensuring participant rights are protected throughout the research process (Vanclay et al., 2013). Ethics were embedded at every stage of this study, guided by Technological University Dublin's policies (2024b), and additional frameworks including European Commission (2023) and the Irish Universities Association (2024). Ethical approval was granted by Technological University Dublin's Learning, Teaching and Assessment (2024c) Ethics Committee in December 2024, shown in Appendix B.

This phenomenological study, using semi-structured interviews, prioritised informed consent, confidentiality, participant welfare and reflexivity (Guillemin & Gillam, 2004; Sanjari et al., 2014). Clear information and consent documents as per Appendix C and Appendix D, ensured voluntary participation with the right to withdraw (Erlandson et al., 1993; O'Leary, 2004) at any time. Confidentiality was maintained through anonymisation and secure data storage on Technological University Dublin's (2025) protected cloud server. Audio recordings were made via Microsoft Teams (2025) with automatic transcription. No incentives were offered, as ethical guidelines do not advocate their use (European Commission, 2023; Higher Education Authority, 2022; Irish Universities Association, 2024) and evidence suggests limited impact on participation uptake (Bernstein & Feldman, 2015; Smith et al., 2019; Zutlevics, 2016).

3.4 Theoretical Perspective

Establishing a theoretical perspective is essential in guiding research design and methodology (Grant & Osanloo, 2014). Crotty (1998) emphasises that understanding the nature of knowledge - epistemology - is the foundation of any research inquiry. Epistemology examines how knowledge is acquired and interpreted, particularly within the context of social reality (Grix, 2002). As Opie (2004) notes, a researcher's view of knowledge significantly influences the type of research undertaken and the methods employed.

This study adopts a constructivist epistemology, which speculates that individuals construct meaning through their experiences and interactions with the world (Bruner, 1960; Piaget, 1926; Vygotsky, 1978). Unlike behaviourism, which views learning as a passive response to stimuli (Skinner, 1953), constructivism recognises the learner as an active participant in the meaning-making process (Jonassen, 1991). Knowledge is not fixed, but context-dependent and shaped by social and cultural interactions (K. Tobin, 1993). Constructivism informs this study's focus on how learners perceive and experience heutagogical learning and the enabling role of digital competencies. This perspective supports exploring personal meaning and subjective understanding, both central to the research objectives.

Epistemology is closely linked to ontology, which considers the nature of reality. While epistemology asks how we know, ontology asks what exists (Edelheim, 2014). Research paradigms serve as the philosophical lens through which studies are approached (Creswell & Plano Clark, 2007; Kuhn, 2012). In evaluating options, positivism was set aside due to its alignment with objectivism and its emphasis on measurable, generalisable data (Gray, 2022). In contrast, the interpretivist paradigm was chosen for its focus on exploring lived experiences and understanding multiple realities (Cohen et al., 2018; Opie, 2004). This paradigm supports qualitative, small-scale inquiry aimed at generating deep insights rather than universal explanations. A constructivist-interpretivist ontological stance recognises reality as subjective and shaped by individual experiences and perspectives (Denscombe, 2014). This view underpins the decision to adopt an interpretivist research paradigm for this study.

3.5 Methodology

This study adopts a qualitative, interpretivist approach, focusing on understanding the lived experiences of learners. Methodologies such as grounded theory (Creswell, 1998; O'Leary, 2004) and ethnography (Thomas, 2009) were initially considered. Grounded theory (Creswell, 1998; O'Leary, 2004) was excluded as its emphasis on iterative data collection and theory generation was misaligned with this study's small scale and focus on experience. Ethnography (Thomas,

2009) was also deemed unsuitable, as the research aimed to explore individual perceptions of heutagogical learning and digital competencies, rather than social behaviours within a cultural context. Phenomenology (Denscombe, 2014; Neubauer et al., 2019) was ultimately chosen for its suitability in examining how individuals interpret and make sense of their lived experiences (Connelly, 2010; Creswell, 2013; Merriam & Tisdell, 2015).

3.6 Philosophical Perspectives of Phenomenology

Phenomenology includes two main strands: descriptive (transcendental), introduced by Husserl (1931) and interpretive (hermeneutic), associated with Heidegger (1962) and Gadamer (1976). Despite differences, both perspectives share a philosophical foundation focused on exploring the essence of human experience (Denscombe, 2014). A comparison of these approaches is shown in Table 1.

Aspect	Descriptive (Transcendental)	Interpretive (Hermeneutic)
Philosophical Roots	Husserl (1931)	Heidegger (1962) Gadamer (1976)
Ontology	Reality exists in consciousness.	Experience is shaped by context and interpretation.
Epistemology	Knowledge gained by bracketing bias; description is key.	Knowledge is co-constructed; interpretation is central.
Researcher Role (Data Collection)	Brackets personal bias to capture participant views.	Acknowledges own influence; reflects alongside participant experience.
Researcher Role (Analysis & Writing)	Identifies “what” and “how” of experience to find essence.	Iterative reflection; links parts of data to evolving whole.

Table 1: Comparison of descriptive and interpretive phenomenology
Source: (Neubauer et al., 2019, p. 92)

Descriptive phenomenology, rooted in Husserl's (1931) philosophy, emphasises exploring individuals' lived experiences to understand how they perceive reality. Key concepts include intentionality, directed consciousness toward a phenomenon, and essences, the core qualities of experiences (Husserl, 1931). Moustakas (1994) expanded this by introducing bracketing or epoche, a process where researchers set aside personal biases to focus on participants' experiences. In this view, the *what* refers to the "**noema**" of experience and the *how* to the "**noesis**" it is experienced (Eddles-Hirsch, 2015; Moustakas, 1994).

Interpretive or hermeneutic phenomenology, influenced by Heidegger (1962), contends that researchers cannot fully separate themselves from the world. Instead, they interpret experiences within context, acknowledging personal beliefs and the social environment (Denscombe, 2014; Eddles-Hirsch, 2015). As Sloan and Bowe (2014) note, "whichever phenomenological methodology is chosen, the phenomenological focus on experience is key" (p. 9).

Interpretive (hermeneutic) phenomenology seeks to uncover meaning through the individual's lifeworld, moving beyond description to interpretation (Creswell, 2013; Neubauer et al., 2019). Researchers engage in the hermeneutic circle, a reflective process of reading, interpreting and revisiting data to deepen understanding (van Manen, 1997). Drawing on Heidegger's (1962) insights, Gadamer (1960) emphasised that "language is the universal medium in which understanding occurs. Understanding occurs in interpreting" (p. 389) highlighting the interplay between interpretation, context and perspective. This study adopts an interpretive (hermeneutic) phenomenological approach to explore how learners experience and make sense of digital competencies in heutagogical learning. By examining these experiences in depth, the study aims to uncover rich, contextualised insights into the phenomenon.

3.7 Methods

Crotty (1998) defines research methods as the specific techniques used to conduct research, distinguishing between quantitative and qualitative approaches. While both follow structured processes, qualitative research focuses

on textual and visual data, offering flexible designs and interpretive analysis (Creswell & Creswell, 2018). Unlike quantitative data, which is numerical and statistically driven, qualitative data explores meanings, experiences and perspectives (Denscombe, 2014). This study does not aim for generalisable findings but instead seeks to understand participants' individual experiences. Hsi (2007) advocates for research into how digital technologies are used in practice, rather than simply what knowledge they deliver. As Denscombe (2014) notes, quantitative research aligns with positivism, whereas qualitative research fits with interpretivism - making a hermeneutic phenomenological approach, grounded in constructivist epistemology and interpretivist ontology, the most appropriate for this study's aims.

3.7.1 Data Collection Methods Considered

Methods refer to the researcher's specific choices for data collection and analysis (O'Leary, 2004). Common data collection methods include document analysis (Creswell & Plano Clark, 2007), observations (Thomas, 2009), interviews (Denscombe, 2014), focus groups (Busetto et al., 2020), case studies (Yin, 2018) and surveys (O'Leary, 2004).

Yin (2018) distinguishes explanatory case studies, examining why and how events happen, from descriptive ones which offer detailed accounts. However, this study's phenomenological focus on lived experience and personal reflection made real-time observation and case study methods unsuitable. While mixed methods (Creswell & Plano Clark, 2007) combine quantitative and qualitative data they often rely on surveys, which, although effective for gathering broad data (Finlay et al., 2022), are less suited to exploring complex, open-ended experiences (Cleland, 2017). Given this study's aim to understand individual perspectives, in depth interviews (Denscombe, 2014) was selected as the most appropriate data collection method.

3.7.2 Interviews as a Data Collection Method

Interpretivism views the social world as shaped by individuals and evolving through interaction, allowing research designs to remain flexible and responsive as the study progresses (Creswell & Plano Clark, 2007). Unlike positivist

approaches, interpretivist research does not rely on fixed hypotheses or rigid structures (Lincoln & Guba, 1985). To explore participants' lived experiences, in depth interviews were identified as the most appropriate method (O'Leary, 2004; Opie, 2004; Sloan & Bowe, 2014). Among interview types, semi-structured interviews offer the ideal balance between consistency and flexibility, providing structure while allowing participants to share experiences in their own words (Denscombe, 2014; Moustakas, 1994). They are particularly suited to phenomenological research and are commonly used in small-scale qualitative studies (DiCicco-Bloom & Crabtree, 2006; Thomas, 2009) and were the chosen data collection method utilised for this research study.

Regarding sample size, Creswell (1998) recommends interviewing up to ten individuals in phenomenological studies, while Moustakas (1994) suggests one to twenty. Korstjens and Moser (2017) maintain that fewer than ten are often sufficient. In line with this guidance, a sampling plan of eight to ten participants was formulated, allowing for rich, in-depth insights.

3.8 Delimitations, Validity and Reliability

3.8.1 Delimitations

Delimitations define the scope and boundaries set by the researcher to keep the study focused and manageable (Theofanidis & Fountouki, 2018). This study was limited to student tutors from the Computer Learning Centre within the Faculty of Computing, Digital and Data at Technological University Dublin (2024a). Data collection was restricted to semester two, after the exam period, to ensure participant availability and to capture meaningful insights without the interference of academic pressures.

3.8.2 Validity and Reliability

In qualitative research, validity refers to the accuracy, credibility and authenticity of findings, emphasising how well the study reflects participants' realities within their unique contexts (Denscombe, 2014; LeCompte & Goetz, 1982). Unlike quantitative research, which values objectivity and replicability, qualitative validity stresses coherence between the research question, chosen methods and data

collected (Leung, 2015). Because qualitative research is rooted in interpretivist and humanistic traditions, concepts like trustworthiness, authenticity and coherence are often more appropriate than traditional validity measures (Cohen et al., 2018; Lincoln & Guba, 1985). Reliability, in this context, refers not to replicating results but to the consistency and thoroughness in data collection and analysis and to how faithfully the findings reflect participants' experiences (Gibbs, 2018).

Some writings suggest moving away from traditional terminology of validity and reliability in research (G. Tobin & Begley, 2004; Whitemore et al., 2001), while others caution that abandoning these terms entirely may undermine perceptions of rigor (Morse, 1999). Regardless of the terminology, ensuring trustworthiness involves practical strategies such as double-checking transcripts, transparent documentation and acknowledging uncertainty in the findings (Gibbs, 2018; Theofanidis & Fountouki, 2018), thereby enhancing the overall quality and credibility of qualitative research.

3.9 Commencing the Data Collection Process

Pietkiewicz and Smith (2014) note that qualitative research focuses on meaning of how individuals interpret the world, experience events and assign significance to phenomena. Phenomenology differs from other approaches by prioritising participants' lived experiences over demographic uniformity, such as gender or social background (van Manen, 1997). Even when participants share a common experience, their differing contexts can yield diverse insights, enriching understanding of the phenomenon (Polkinghorne, 2005).

3.9.1 Limited Literature on Participant Recruitment Practices

Gaining access to research sites and participants has been a long-standing challenge for researchers (McFadyen & Rankin, 2016). Recruitment depends on several factors, including the study's design, collaboration with relevant professionals, participant characteristics and preferences and the strategies employed (Patel et al., 2003). It is widely recognised as both one of the most critical and most difficult aspects of the research process (Khatamian Far, 2018;

Patel et al., 2003). Despite its significance, recruitment is often underexplored in qualitative methodology texts, which tend to focus on interview design, transcription and data saturation (Kvale, 1996; O’Leary, 2004; Patton, 2015). This oversight is particularly evident in key texts. For example, Kvale’s (1996) influential seven stages of interview research - thematising, designing, interviewing, transcribing, analysing, verifying and reporting - omit recruitment entirely. Similarly, Thomas (2009, p. 155) makes only a brief reference to recruitment and Opie (2004, p. 115) mentions it in passing. Excluding recruitment from methodological discussions neglects its complexity and its vital role in research design (Bonisteel et al., 2021; Kristensen & Ravn, 2015).

Effective recruitment requires clarity around inclusion and exclusion criteria and an awareness of how different strategies affect participant engagement (Kristensen & Ravn, 2015). In this study, targeted recruitment strategies were essential in overcoming barriers such as limited access and communication constraints.

3.9.2 Recruitment Strategies

Participants in qualitative research are selected not for statistical representation but for their ability to offer meaningful insights into the research question (Kristensen & Ravn, 2015; Laverly, 2003). A strong foundation for data collection begins with an effective recruitment strategy (Streeton et al., 2004). One key strategy in this study was the use of mediators and gatekeepers - individuals with formal or informal authority who facilitate or control access to potential participants (Kristensen & Ravn, 2015; Lune & Berg, 2016). Gaining such access can be complex and multi-layered, often described as a “continuous push and pull” (van Manen, 1997, p. 144) particularly when multiple gatekeepers must be approached (Wanat, 2008). Gatekeepers play a pivotal role by shaping access to participants and influencing the scope of research (McFadyen & Rankin, 2016), even though they are not part of the study population. In this study, the dissertation supervisor served as a mediator, helping to establish contact with gatekeepers and supporting participant recruitment efforts. Initial access was secured through collaboration with an Academic Leader at the Computer Learning Centre, who

disseminated pre-prepared recruitment emails and follow-up reminders. Due to a slow initial response, the strategy was expanded to include the Research and Innovation department and lecturers, who helped amplify recruitment via their networks. This broader approach significantly improved visibility and participation.

Snowball sampling (Goodman, 2011; Noy, 2008), was also utilised, aiming to reach further participants through peer referrals. However, all interviewees ultimately responded through the initial gatekeeper strategy, rendering the snowball sampling approach ineffective. Throughout the process, strict ethical standards were upheld to ensure voluntary participation and avoid any sense of pressure or coercion (McDermid et al., 2013). In line with ethical standards, participants received an email invitation to voluntarily participate in the interviews, as per Appendix E. Nine participants were recruited, evenly split across the gatekeeper recruitment strategy sources, as per Figure 3.

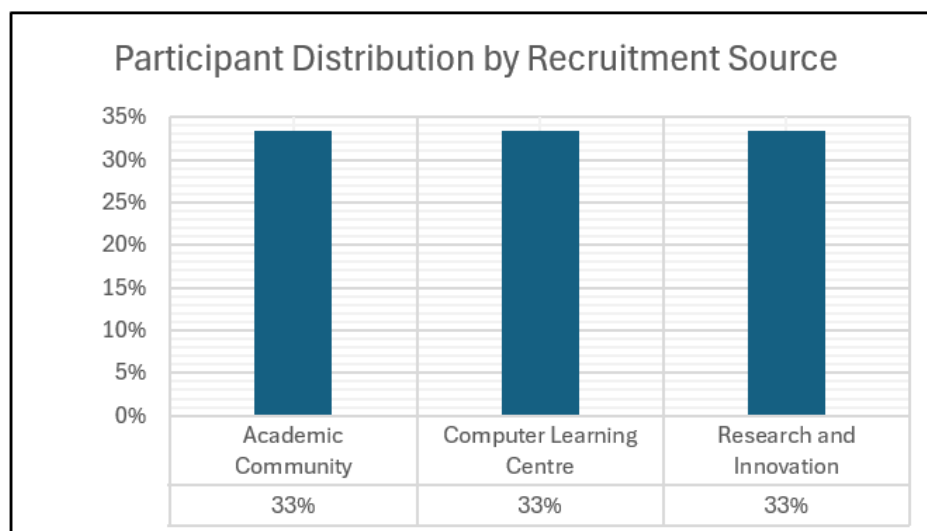


Figure 3: Participant distribution by recruitment source.

3.10 Employing Interviews for Data Collection

Semi-structured interviews were selected as the primary data collection method for this study. Qualitative research often involves a small number of participants with relevant, lived experience (Patton, 2015). In phenomenological research, in-depth interviews are commonly used to explore the meaning of a phenomenon

from participants' perspectives, typically involving around ten individuals (Creswell & Plano Clark, 2007). The final participant count in this study was nine, aligning with the expected range of eight to ten (Creswell, 1998; Moustakas, 1994). Participants were selected based on their direct experience with the phenomenon and willingness to share unique insights (Polkinghorne, 2005; van Manen, 1997). Semi-structured interviews allowed for flexibility while ensuring key topics were covered, enabling participants to express their views in their own words. This approach supported a deeper understanding of digital competencies as enablers of heutagogical learning.

3.11 Interview Schedule Design

Establishing a setting of trust was essential to encourage open and honest dialogue (Guillemin & Heggen, 2009; McGrath et al., 2019). A well-developed interview schedule contributed to the study's trustworthiness (Kallio et al., 2016). The interview schedule, provided in Appendix F, was carefully designed to align each section with the specific research question(s), supporting a phenomenological exploration of learners' experiences with digital competencies in heutagogical learning contexts. Grounded in the principles of phenomenology, the semi-structured format encouraged open, reflective dialogue while ensuring consistency across participants for meaningful comparison. The open-ended questions were designed to elicit rich, diverse accounts of learners' experiences. The schedule was organised into six distinct sections, each with specific questions to focus on a particular dimension of the phenomenon under study.

Section 1 probes participants' conceptual understanding of independent learning, asking them to define it in their own words and reflect on the personal qualities or skills associated with it. This section lays the foundation for understanding how participants internalise the concept of self-directed learning, a key dimension of heutagogy. Section 2 shifts focus to digital competency in learning, asking which digital skills and abilities learners perceive as essential and how they engage with digital resources. This section explores participants' confidence, preferences and the role digital tools and technologies play in ongoing learning, rather than just quick information retrieval. Section 3 investigates challenges encountered with

digital competencies, prompting reflections on feelings of frustration, adapting to technological change, motivation and resilience. This area is crucial in phenomenological research as it uncovers emotional and behavioural responses to real-life obstacles, shedding light on learners' adaptive strategies. Section 4 explores learners' confidence with digital tools, technologies and resources and how developing specific digital competencies contribute to their sense of capability and autonomy. Participants are encouraged to recount transformative experiences where acquiring digital competencies enhanced their heutagogical learning capacity. Section 5 invites reflective thinking on how participants' learning approaches have evolved over time, particularly in relation to the growth of their digital competencies and their ability to learn independently. This section also prompts advice for peers, eliciting metacognitive insights that reveal how participants make meaning of their experiences. Finally, Section 6 allows space for any additional thoughts, ensuring that potentially overlooked but significant aspects of the experience can surface. The matrix diagram in Figure 4, provides a visual representation of how each section of the interview schedule was intentionally designed to correspond with specific research questions, with the overarching research question framing the overall context of the inquiry.

How do digital competencies contribute to the enhancement of heutagogical learning experiences and how can the impact of digital competencies on learners' ability to engage in self-directed learning be understood?				
Interview Schedule Sections	Research Questions			
	Perception of learners' own digital literacies in their learning success	Essential digital competencies for heutagogical learning	Digital competency confidence in heutagogical learning	Challenges & coping strategies in heutagogical learning
1: To gauge understanding of independent learning	●	●		
2: To gauge understanding of digital literacy in learning	●	●		
3: Exploring experiences of digital challenges in learning			●	●
4: To gauge confidence with digital tools for independent learning	●		●	
5: Reflection	●	●	●	●
6: Additional comments	●	●	●	●

Figure 4: Interview schedule sections and research question(s) matrix

This matrix contextualises the purpose and emphasis of each interview schedule section to reflect learners’ lived experiences with digital competencies in heutagogical learning. The interview schedule design supports a phenomenological exploration of how learners navigate and make sense of the intersection between digital competency and heutagogical learning. It systematically probes cognitive, emotional and behavioural dimensions, while remaining flexible to allow the emergence of authentic, lived experience.

The interview schedule was planned to last forty-five minutes and ultimately the interview sessions averaged thirty-five minutes in length, see Figure 5.

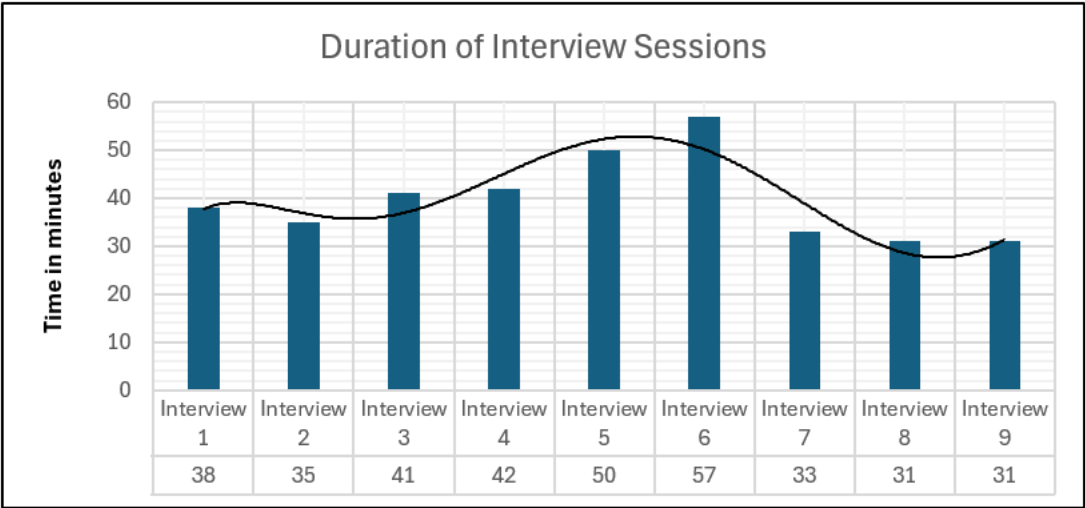


Figure 5: Duration of interview sessions.

3.12 Profile of Participants

The participants' gender distribution consisted of five females (56%) and four males (44%), as per Figure 6.

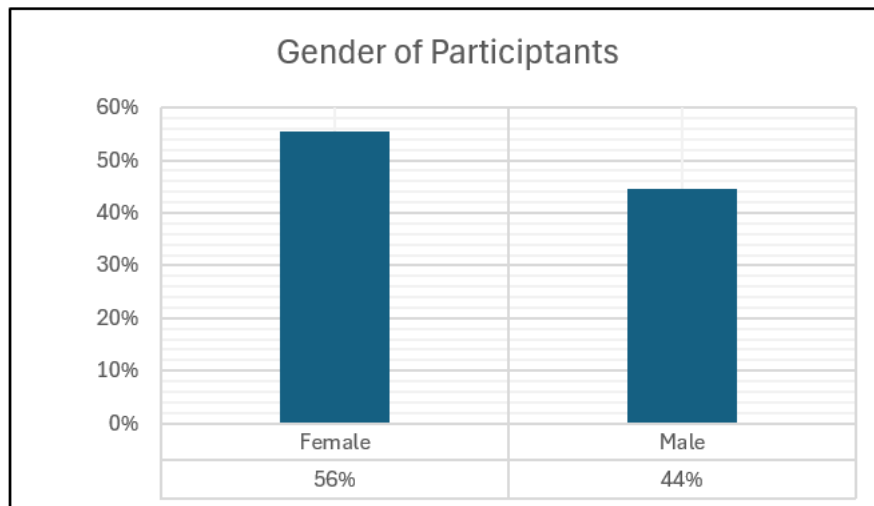


Figure 6: Gender of participants.

Seven participants (78%) were engaged in undergraduate studies, while two (22%) were pursuing postgraduate studies, as per Figure 7.

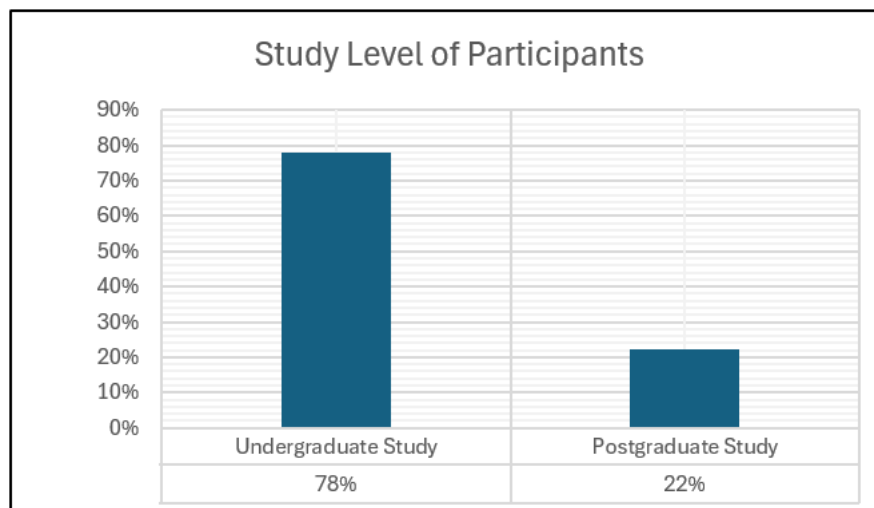


Figure 7: Study level of participants

Eight participants (89%) were studying full-time, while one participant (11%) was studying part-time, as per Figure 8.

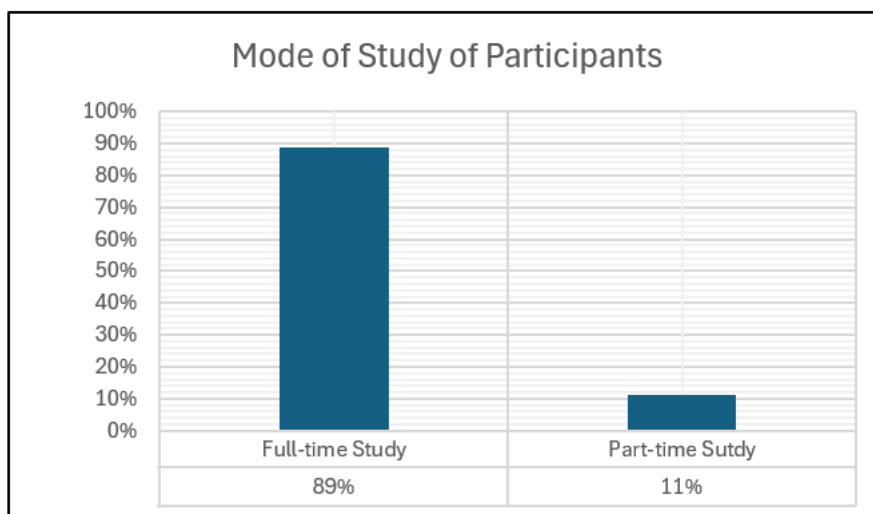


Figure 8: Mode of study of participants

3.13 Thematic Analysis as a Central Framework

Thematic analysis is a widely used interpretive strategy in hermeneutic phenomenology for identifying patterns in transcribed interviews (Alsaigh & Coyne, 2021; Ho et al., 2017; van Manen, 2014). Thematic analysis effectively captures shared meanings and offers a rich, detailed account of the data (Benner, 1985). As van Manen (1997, p. 78) describes, thematic analysis goes beyond description to uncover themes embodied in participants' evolving meanings and imagery. This method was well-suited to the aims of the study, providing a systematic framework for coding and interpreting qualitative data within a constructivist lens to reveal underlying social processes (Braun & Clarke, 2014; Nowell et al., 2017).

Braun and Clarke (2006) identify two main approaches to thematic analysis: deductive and inductive. Deductive analysis is guided by an existing theoretical framework, focusing on specific concepts or themes within that context, often providing a more targeted interpretation of the data (Braun & Clarke, 2006; Hsieh & Shannon, 2005). In contrast, inductive analysis is data-driven, allowing themes to emerge naturally from the participants' language without imposing prior assumptions (Braun & Clarke, 2006; Ho et al., 2017). Both approaches require a

clear theoretical framework to provide depth and interpretive power beyond mere description (Braun & Clarke, 2020). Although deductive analysis is typically associated with positivist approaches and inductive analysis with constructivist perspectives, both methods are not inherently tied to any particular epistemology (Byrne, 2022). Typically, one approach predominates, reflecting a focus either on researcher-driven theory or participant-driven meanings (Braun & Clarke, 2012; Byrne, 2022).

This research study adopted a predominantly inductive approach, allowing meaning to emerge naturally from the data rather than being influenced by predefined categories (Robson, 2024) with data being open-coded and prioritising respondent or data-based meanings (Byrne, 2022). However, a degree of deductive analysis was incorporated to ensure that open coding produced themes relevant to the research question(s) and that the meanings emphasised aligned with those questions. This approach aligned with the study's constructivist epistemology and interpretivist ontology, recognising both the meanings constructed by participants and my role as the researcher in interpreting those meanings.

3.14 Commencing the Data Analysis Process

Data analysis in hermeneutic phenomenology is a reflective, interpretive process aimed at uncovering participants' meanings of their lived experiences (van Manen, 1997). Braun and Clarke's (2006) six-phase framework guides thematic analysis by structuring the process while allowing for recursive, iterative movement between phases (Braun & Clarke, 2020), as depicted in Figure 9. Rather than rigid rules, they serve as flexible guidelines, enabling adaptation to the data and research questions, which may require revisiting earlier stages as new insights emerge (Braun & Clarke, 2006, 2013, 2020).

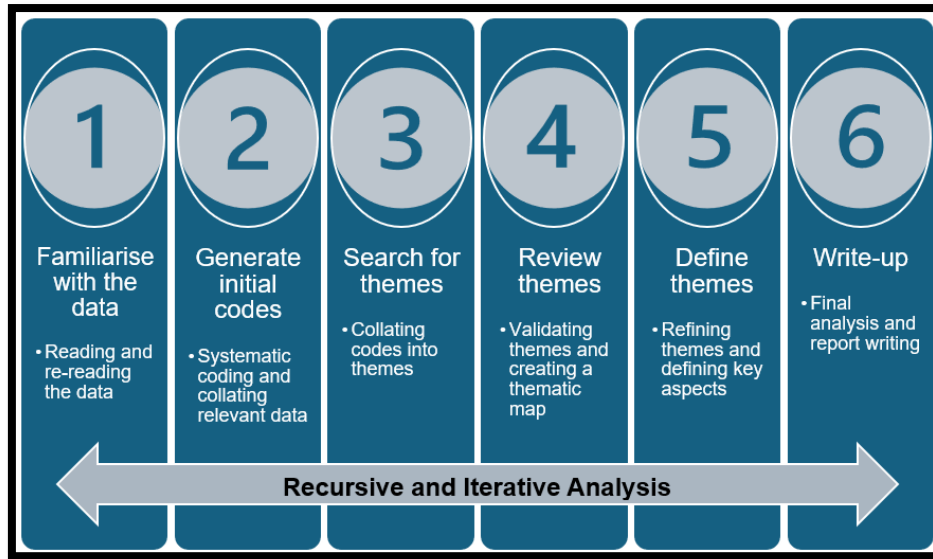


Figure 9: Six-phases of thematic analysis.

Source: (Braun & Clarke, 2006, p. 87)

In this study, the six-phase framework for thematic analysis proposed by Braun and Clarke (2006) was used as a guiding structure. As part of this process, the early identification of preliminary themes was adopted as a valuable organisational and iterative step prior to detailed coding. Although not prescribed as a strict requirement by Braun and Clarke (Braun & Clarke, 2006, 2013, 2020), this strategy was intentionally adopted to enhance the rigour and depth of the analysis. The rationale for this approach is outlined as follows:

- *Facilitating familiarisation*: multiple transcript readings helped identify early patterns and enhanced understanding of the data (Braun & Clarke, 2006).
- *Guiding focused coding*: preliminary themes provided a flexible foundation for coding, keeping analysis aligned with research question(s) (Braun & Clarke, 2013; Byrne, 2022).
- *Aiding organisation*: grouping unstructured data into coherent categories helped build a clearer thematic framework (Clarke & Braun, 2018).

This approach aligns with the essence of Braun and Clarke's (2006) framework, which emphasises the flexibility and interpretive depth of thematic analysis. It reflects not only the systematic identification of patterns across the data, but also the inherently reflexive and iterative process through which meaning is

constructed. Central to this framework is the understanding that themes do not passively emerge from the data but are actively developed by the researcher through deep engagement, critical reflection and contextual interpretation. This reinforces the researcher's role as a co-constructor of meaning, shaping the analytic process through theoretical positioning, methodological choices and experiential understanding.

By applying Braun and Clarke's (2006) model, the analysis involved a conscious and deliberate effort to remain grounded in participants' voices while recognising the influence of the researcher's perspective in theme development. This balanced approach ensured that the resulting themes were both evidence-based and interpretively rich, capable of capturing the complexity and depth of learners' experiences.

3.15 Chapter Summary

Thematic analysis, guided by Braun and Clarke's (2006) outline, provided a structured yet interpretive approach to analysing the qualitative data in this study. This method allowed for a careful synthesis of participant narratives while acknowledging the researcher's interpretive role in shaping meaning. What follows is a detailed presentation of the findings, organised around the key themes that emerged from the data and grounded in the lived experiences of the participants.

Chapter 4: Data Analysis and Presentation of Findings

4.1 Introduction

This chapter presents the analysis and key findings of the study, guided by a thematic analysis approach rooted in phenomenological methodology. The chapter begins by outlining the systematic process undertaken to identify and refine themes from the interview data. Through this approach, the lived experiences of learners are explored to reveal patterns and meanings related to digital competencies within heutagogical learning environments. The findings are then presented through a series of core themes that capture both the essence of learners' experiences and the complexities they encounter. These insights offer a deeper understanding of the factors shaping self-directed, digitally mediated learning and set the stage for further interpretation and discussion in the following chapter.

4.2 The Process of Thematic Analysis

The six-phase process of thematic analysis, developed by Braun and Clarke (2006, 2012, 2013, 2020), provides a flexible yet systematic framework for analysing qualitative data. This approach involves six key stages: (1) familiarisation with the data, (2) generating initial codes, (3) searching for themes, (4) reviewing themes, (5) defining and naming themes and (6) producing the report. Each phase builds upon the previous one, allowing the researcher to move iteratively between the data and analysis to identify patterns of meaning. Widely used in phenomenological research (Braun & Clarke, 2021; Ho et al., 2017; Roberts et al., 2019), this method supports a deep exploration of participants' lived experiences by grounding themes in their own words and perspectives.

The following outlines how the six-phase process of thematic analysis was applied in this study to understand how digital competencies can enable heutagogical learning. Each phase is presented in sequence, demonstrating how interview data was progressively refined into meaningful themes and codes. This process was both iterative and reflective, aligning with the phenomenological focus on

understanding how participants experience and interpret their independent learning environments.

The analysis begins with an account of how data familiarisation and initial coding were conducted, followed by the development and refinement of themes through recursive cycles of review. The themes and codes that emerged through this process represent key patterns across the data and provide insight into the participants' experiences of learning, autonomy and digital engagement within their learning experience. These upcoming sections trace the analytical journey from first contact with the data to the final thematic framework, offering transparency and depth in how meaning was constructed from the participants' narratives.

4.2.1 Phase One: Data Familiarisation

During the data familiarisation phase, a comprehensive and iterative process was employed. This involved multiple readings of the transcribed data, complemented by attentive listening to the original audio recordings. Each interview was initially reviewed by listening to the recording once while reading the corresponding transcription. This process involved active listening (Lavee & Itzchakov, 2023; Rost & Wilson, 2013; Spataro & Bloch, 2018) where the content was absorbed to gain an initial understanding of key interview topics, enabling deeper insight into the discussions. Active listening, through focused engagement and attention to the nuances of the material, supported a more reflective and immersive connection with the data. The transcriptions were updated using a paralinguistic (Denham & Onwuegbuzie, 2013; Hayes et al., 2016) method, which allowed for the incorporation of subtle yet significant elements and key moments from the interviews, including inflections, emotions, pauses and tones from both the interviewer and the interviewee. This contrasts with the orthographic method (Braun & Clarke, 2013) which focuses on transcribing spoken words verbatim from recorded data.

For instance, when asking individual interviewees whether they were confident in their digital skills, actively working to improve them, or felt they had sufficient knowledge to support independent learning, one participant noted they were

making a deliberate effort to improve. The paralinguistic transcription captures non-verbal cues like laughter, pauses and hesitations, revealing the speaker's emotions, confidence and thought process. In this example, the laughter ("*<LAUGHS>*") significantly alters the interpretation of the response:

"Yeah...<PAUSES>

Hold up...<LAUGHS> I would never say what I know is enough. I always say that I never know enough...<LAUGHS> probably...<LAUGHS>.

Yeah...<PAUSES>... So, I'm still learning and there's always more resources out there that I don't know..." (Interviewee 2, transcript timestamp 7:28).

In an orthographic approach, the response would appear more structured, confident and firm in the belief that learning is ongoing. With the chosen paralinguistic approach, the inclusion of laughter and hesitations suggests a more nuanced, self-aware or even humorous take on the idea of continuous learning. The speaker might be acknowledging their own limitations in a light-hearted way rather than making a strict philosophical statement. This paralinguistic, iterative method fostered a richer, more refined understanding between the written and spoken word, facilitating a deeper engagement with the data.

At this early stage of data immersion, it proved useful to make notes and jot down initial impressions. The following represents a preliminary set of notes and observations compiled during the early stages of familiarisation with the data and its analysis.

Interviewees saw self-directed learning as continuing education outside of their university classes, influenced by their interests, hobbies, time and career goals. They value tech for learning new skills or supporting their studies, though their digital literacy varies. Some are good at finding and checking online info, staying organised and proactive. Others tend to trust certain sources without double-checking. While a few didn't fully understand what the term digital literacy meant at first, they quickly

recognised its importance. They also pointed out the challenges of paid resources and the fairness issue. Despite obstacles like time constraints, information overload, self-doubt and fear of making mistakes, they've developed strategies to cope and emphasised the need for perseverance and personal determination and resilience in overcoming these challenges.

These initial notes helped to identify recurring patterns and individual variations in their self-directed learning approaches, providing a preliminary framework for subsequent analysis.

4.2.2 Phase Two: Generating Initial Codes

Coding is a systematic process that reduces large volumes of data into smaller, coherent units of meaning (Maguire & Delahunt, 2017). This phase involved a detailed analysis of the interviews, focusing on both meaning and language to capture key insights, with notes and comments rooted in a phenomenological approach and faithful to participants' experiences. In the data analysis process, the first data item is thoroughly examined and the entire item is systematically analysed to identify sections that may address the research question (Braun & Clarke, 2013).

While hard-copy coding remains common, digital tools are also widely used in this phase (Braun & Clarke, 2013, p. 210). This study used Microsoft Word's (2025b) comments feature for initial coding, offering a familiar and efficient way to organise and analyse interview transcripts. Codes were added next to highlighted text, aiding the identification of key statements, recurring themes and relevant experiences, while ensuring a transparent and organised process. For instance, when Interviewee 4 was asked about their understanding of self-directed, independent learning, they responded:

".. independent learning is just like for me, comprises the idea of how each individual gains knowledge or what is the easiest way for people to understand the topic or to learn a new skill..." (Interviewee 4, transcript timestamp 0:33).

This initiated the definition of Theme One (T1) as “*Definition and understanding of self-directed learning*” which was coded as T1 Code1a as “*This view highlights self-direction as using personal learning preferences instead of standardised approaches*”. Comments were concise and specific, linking textual data to identified themes, as shown in Figure 10.

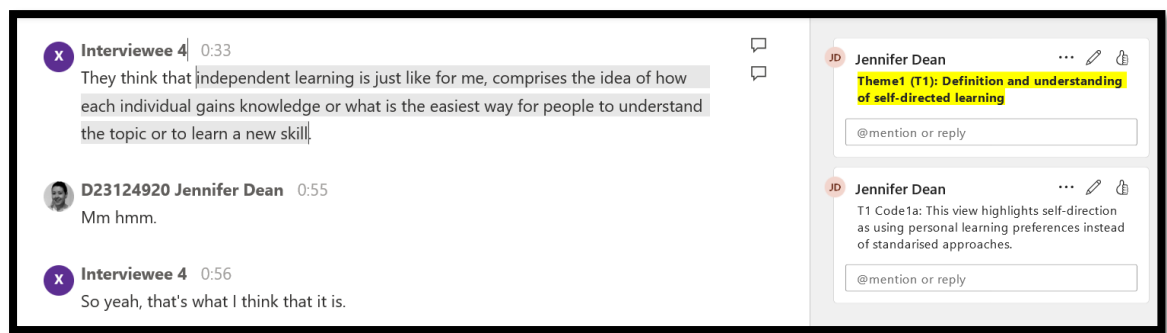


Figure 10: Comments on emerging themes and codes from transcripts.

A consistent coding process was applied across all transcripts to ensure reliability in identifying key themes. Notes were compiled into a separate document to support further analysis. While tools like NVivo (2025) can aid large-scale qualitative analysis (Maguire & Delahunt, 2017), alternatives like Microsoft Excel (2025a) can also be effective (Bree & Gallagher, 2016). Documenting code development enhances transparency and allows for refinement if needed (Byrne, 2022).

The coding process was systematically documented in a Microsoft Excel (2025a) spreadsheet. Each interview had its own worksheet, with themes listed in the first row and corresponding codes beneath them, as shown in Figure 11. Themes were displayed in Row 1 and Column A listed data item numbers and subsequent columns recorded initial codes. This matrix format enabled easy cross-referencing and streamlined organisation.

	A	B	C	D	E	F	G	H
Theme Reference	T1: Definition and understanding of self-directed learning	T2: Skills & motivational factors to self-directed learning	T3: Digital literacy as a basis for independent learning / components	T4: Organisation methods	T5: Challenges in Digital Learning - unfamiliar technical areas - information overload - previous learning experiences	T6: Social aspects of independent learning	T7: Reflection of self-directed learning / digital competencies	
1	Code1:	T1 Code1a: This view highlights self-direction as using personal learning preferences instead of standardised approaches.	T2 Code1a: Interviewee demonstrates clear recognition of their preferred learning approach T2 Code 1b: this awareness allows for strategic selection of learning resources and approaches that align with personal preferences	T3 Code1a: participant identifies several distinct components of digital literacy - focus on information source evaluation T3 Code1b: assessment of online information quality and reliability	T4 Code1a: participant describes a significant shift from disorganisation to structured information management T4 Code1b: the change in information management strategies perhaps based on reflective assessment of previous learning experiences.	T5 Code1a: difficulty in navigating unfamiliar technological domains T5 Code1b: Emotional factors greatly influence self-directed learning, especially when exploring new digital concepts or tools.	T6 Code1a: peer consultation as a strategic learning approach T6 Code1b: suggests effective self-directed learning involves strategic social engagement rather than isolated individual effort	T7 Code1a: recognition of previous learning limitations demonstrates reflective self-assessment that directly influences current learning approaches. T7 Code1b: deliberate learning strategy adjustments T7 Code1c: Effective self-directed learning involves continually refining strategies through reflection on past experiences.
2	Code2:	T1 Code2a: suggests that effective self-directed learning involves not only knowledge acquisition but also continuous self-assessment and verification of learning progress T1 Code2b: Indicates understanding of learning as an active process requiring ongoing monitoring rather than passive information consumption	T2 Code2a: further elaborates on their preference for practising and pairing it with theory T2 Code2b: Effective self-directed learning requires both finding the right resources and applying strategies that fit learner's learning style.	T3 Code2a: critical thinking emerges - the duality of external evaluation of information sources and internal validation of understanding T3 Code2b: outward facing assessment of information and inward processes working within self-determined learning	T4 Code2a: noting a systematic approach to information cataloging represents a sophisticated response to the challenges of digital information availability T4 Code2b: suggests effective self-directed learning includes acquiring knowledge and building a system to organise and access it later.	T5 Code2a: participant identifies the challenge of establishing foundational knowledge before advancing to complex topics T5 Code2b: Sequential learning reflects a structured approach, differing from the non-linear flow of digital information. T5 Code2c: suggests a key challenge in self-directed digital learning is organising unstructured information.	T6 Code2a: how social learning influences goal-setting processes T6 Code 2b: Turning others' experiences into personal learning goals shows how social knowledge shapes individual learning paths.	T7 Code2a: this suggests that effective self-directed learning involves continuous self-assessment not only of knowledge acquisition but also of the preferred learning style or approach
3	Code3:		T2 Code3a: these preferences demonstrates how learning style	T3 Code3a: collaboration and creativity as distinct skill		T5 Code3a: a challenge of handling information overload and choosing	T6 Code3a: Self-directed learning involves setting	
< > Interview 1Interview 2Interview 3Interview 4Interview 5Interview 6Interview 7Interview 8Interview 9+⋮◀▶ ReadyAccessibility: Investigate								

Figure 11: Tracking, coding and theme identification.

As coding advanced, new iterations were added, and transcripts were continually reviewed to refine existing codes and identify new ones. The number of codes is not fixed; what's important is that the final dataset offers sufficient depth to analyse patterns and reflect the diversity of participants' perspectives (Byrne, 2022).

4.2.3 Phase Three: Generating Themes

This section describes how themes and codes were structured in a Microsoft Excel (2025a) workbook to ensure analytical consistency and transparently document changes with clear justifications. Each theme and code were systematically reviewed against the research question(s) and interview data to refine the thematic framework for greater accuracy and coherence.

The following provides a worked example of how a recurring theme was managed across interviews, highlighting both common patterns and variations in participant responses. Initially titled "Skills and Motivational Factors for Self-Directed Learning," this theme was labelled T4 ("T" indicating theme, with a numeric identifier). It appeared in Interviews 1 through 6 and overlapped with a later theme labelled T2, "Skills and Qualities for Independent Learning," in Interviews 7 and 8 and with a similar theme, T2 "Essential Qualities," in Interview 9. Together, these themes reflect key skills, qualities and motivational factors - both internal (e.g., intrinsic motivation, self-discipline, curiosity) and external (e.g., environmental

resources, social support) - that support effective self-directed learning. Upon review, it became evident that these factors significantly overlapped, differing mainly in phrasing and perspective, as illustrated in Figure 12.

AutoSave On

Themes & Codes_Skills Motiv Iteration

No Label - Last Modified: Just now

Search

FileHomeInsertPage LayoutFormulasDataReviewViewAutomateDeveloperHelpAcrobat

CommentsShare

A1

A

B

C

D

E

F

G

H

I

J

K

1

2

3

4

Interview Source

Interview 1

Interview 2

Interview 3

Interview 4

Interview 5

Interview 6

Interview 7

Interview 8

Interview 9

Theme Reference

Code1:

Code2:

Code3:

T2 Skills & motivational factors to self-directed learning

T2 Skills & motivational factors to self-directed learning

T2 Skills & motivational factors to self-directed learning (incl. personal attitudes)

T2 Skills & motivational factors to self-directed learning

T4 Skills & motivational factors to self-directed learning

T2 Skills & motivational factors to self-directed learning

T2 Skills & Qualities for Independent Learning

T2 Skills and Qualities of an Independent Learner

T2 Essential Qualities

T2 Code1a: influence of external factors on learning motivation
T2 Code1b: quality of instruction emerges as a critical determinant of student engagement

T2 Code1a: Participant identifies several skill set necessary for effective independent learning - with initiative as a fundamental attribute
T2 Code1b: participant articulates a range of practical skills that support the independent learning process, including resource identification and time management

T2 Code2a: perspective suggests that initial interest may be instructor-dependent rather than intrinsically generated
T2 Code2b: interplay between intrinsic motivation and external educational quality
T2 Code2c: a complex relationship between instructor quality and subject interest

T2 Code3a: future career aspirations
T2 Code3b: skill development beyond curriculum requirements

T2 Code1a: identified curiosity as a fundamental attitude
T2 Code1b: independent learning typically begins with intrinsic interest rather than external requirements
T2 Code1c: curiosity and motivational drivers

T2 Code2a: further elaborates on their preference for practicing and pairing it with theory
T2 Code2b: Effective self-directed learning requires both finding the right resources and applying strategies that fit learner's learning style

T4 Code3a: The focus on interest, motivation, and rewards supports sustained engagement, especially in independent learning—important for those with ADHD facing attention challenges

T4 Code1a: The interviewee explicitly identifies interest as a prerequisite for successful learning engagement
T4 Code1b: intrinsic interest as a primary driver of learning persistence
T4 Code1c: participant explaining that effective self-directed learning requires the drive to do it and motivation to do it

T2 Code2a: involves imaginative consideration of diverse potential knowledge sources, including both documentary resources and human expertise
T2 Code2b: explore multiple possibilities rather than following predetermined pathways

T2 Code3a: participants understanding of independent learning as requiring inventive approaches to knowledge seeking rather than just following established procedures

T2 Code1a: curiosity emerging as a foundational characteristic
T2 Code1b: positioning intrinsic motivation as fundamental to successful independent learning
T2 Code1c: driven by genuine (internal) interest rather than external requirements

T2 Code2a: Time Management - The ability to effectively manage one's time to accommodate learning goals

T2 Code3a: Goal Setting - The ability to set clear and achievable learning objectives

T2 Code1a: Essential Skills/Qualities - The skills, characteristics, and traits perceived as necessary for successful independent learning

T2 Code2a: Supplementing Assigned Work - Going beyond the assigned work to conduct independent research and add unique elements to projects

T2 Code1a: Active Application of Skills - Demonstrating the ability to actively apply learned skills in projects and assignments

T2 ST2: Essential Qualities - Structuring the Learning Environment

T2 ST3: Essential Qualities - Fostering Consistency and Progress

T2 ST1: Essential Qualities - The Backbone of Independent Success

Theme Iteration - Before

Accessibility: Good to go

Figure 12: Refining themes: iterative code analysis pre-consolidation.

The preliminary analysis revealed that several codes reflected the same underlying concept, creating redundancy and reducing coding efficiency. To resolve this, overlapping codes were reviewed and consolidated to retain depth while improving clarity. Related codes were grouped into broader categories, enhancing coherence and supporting clearer interpretation of interview data.

- 1. Initiative, Curiosity and Intrinsic Motivation:** Several codes (T2 Code1a, T2 Code1b, T2 Code1c, T4 Code3a, T3 Code4b, T2 Code5a) highlighted internal drives behind self-directed learning. The overlap and unclear distinctions suggested a need for unified categorisation.
- 2. Essential Skills (Resource Identification, Time Management):** Codes like T2 Code1b, T2 Code2a and T2 Code2b described the core competency of locating resources, managing time and applying knowledge, warranting consolidation despite varied phrasing.

3. **Persistence and Resilience:** Multiple codes (T2 Code3a, T2 Code4a, T2_ST1 Code1a) captured overcoming challenges, which were merged into a single category to improve clarity.
4. **Influence of External Factors (Career, Environment):** Codes such as T2 Code2b, T2 Code2c and T2 Code3a addressed external influences on motivation. Consolidating these related codes streamlined analysis without losing meaning.

The final iterative analysis, after consolidation and refinement, resulted in a more structured and effective coding system for examining self-directed learning skills, as shown in Figure 13.

Interview Source	Across All Interviews
Theme Reference	T1: Skills, Motivation and Mindset for Effective Self-Directed Learning
Code1:	T1 Code1: Intrinsic Motivation & Curiosity T1 Code1a: Driven by genuine interest or external factors as a catalyst. T1 Code1b: The impact of initial drive on long-term engagement.
Code2:	T1 Code2: Essential Skills for Resource Management and Application T1 Code2a: Proficiency in finding, evaluating and utilising diverse information sources. T1 Code2b: Effective use of available tools.
Code3:	T1 Code3: Resilience and Growth Mindset T1 Code3a: Ability to persevere through challenges and view setbacks as learning opportunities. T1 Code3b: Self-awareness and adaptability in identifying and adjusting learning approaches.
Code4:	T1 Code4: Impact of External Factors on Motivation T1 Code4a: Career aspirations and enthusiasm as drivers for initial and continued interest in skill development. T1 Code4b: Influence of the environment and learning community.

Figure 13: Refining themes: iterative code analysis post-consolidation.

The revised framework included:

- **T1 Code1: Intrinsic Motivation & Curiosity** - merged previous internal motivation codes and unified perspectives on sustained motivation.
- **T1 Code2: Essential Skills for Resource Management and Application** - consolidated information literacy codes and integrated time management, goal-setting and practical application.
- **T1 Code3: Resilience and Growth Mindset** - merged persistence and adaptability codes while capturing learning strategies and flexibility.
- **T1 Code4: Impact of External Factors on Motivation** - combined career ambitions and skill development influence codes and reflected the role of collaborative learning spaces.

Final coding adjustments improved conceptual clarity, streamlined analysis and deepened insights. Grouping similar codes into clear categories differentiated concepts while preserving depth. Redundant codes were merged to reduce complexity and minimise misinterpretation. The revised structure better aligned with the research focus, clarifying how skills, motivation and mindset support independent, self-directed learning. These refinements ensured the coding scheme was guided by research question(s) and theory, not just description.

4.2.4 Phase Four: Review of Potential Themes

This phase shifts focus from individual data items to analysing the dataset as a whole, reviewing coded data to identify connections and grouping them into themes or sub-themes based on shared meanings (Braun & Clarke, 2013; Byrne, 2022). Braun and Clarke (2006) define a theme as capturing “something important about the data in relation to the research question” and reflecting a patterned response within the dataset (p. 82). Recognising patterns involves reviewing codes and their data for similarities and overlaps (Braun & Clarke, 2013). Central organising concepts emerge by identifying topics or issues linked to multiple codes, while particularly rich or complex codes may become themes independently (Charmaz, 2024).

At this stage, codes were reviewed and grouped into themes. Several codes related to the impact of self-directed learning, covering internal and external factors, appeared across different themes in the nine interviews. These patterns spanned themes such as T3: Growth of Self-Directed Learning Skills, T4: Emotional and Social Aspects of Independent Learning and T3: Practical Application of Independent Learning, as shown in Figure 14.

Themes	T2: Skills & motivational factors to self-directed learning	T3: Growth of self-directed learning skills	T4: Emotional Response	T1: Defining Independent Learning	T3: Digital literacy as a basis for independent learning / components	T3: Practical Application of Independent Learning
Codes	T2 Code1a: influence of external factors on learning motivation	T3 Code2a: COVID-19 pandemic as a catalyst that accelerated independent learning skill development.	T4_ST1: Emotional Response: The Joy of Progress and Growth	T1 Code3a: Problem-Solving & Motivation: Key aspects of independent learning include problem-solving skills, time management, motivation and focus.	T3 Code3b: Viewing collaboration as a digital skill emphasises how online spaces enable unique knowledge-building beyond face-to-face interactions.	T3 Code1a: Specific Project-Based Learning: A specific example of learning HTML independently to enhance a website project.
Codes	T4 Code5a: Self-assessment of understanding capability appears important for independent learning to monitor their own comprehension and determine when learning objectives have been achieved	T3 Code2b: self-reliance and understanding it as a skill developed - driven by uncontrolled situation rather than planned educational progression	T4_ST2: Emotional Response: Experiencing Personal Growth			
Codes	T4 Code3a: The focus on interest, motivation and rewards supports sustained engagement, especially in independent learning—important for those with ADHD facing attention challenges.	T3 Code3b: connection between independent learning capabilities and broader confidence in problem-solving abilities - potentially expanding Beyond specific learning situations.	T5 Code6d: The impact of social factors on "independent" learning highlights an understanding that self-directed learning occurs within social contexts, not in isolation.			
Codes	T2 Code4a: Self-Esteem: Belief in one's own ability to learn and succeed independently.	T1 Code2a: observation that independent learning often begins not just about information seeking but with a fundamental process of independently defining what needs to be learned.				

Figure 14: Theme and code generation pre-refinement.

Grouping the information into several themes aided individual interview analysis, but the themes became overly dense and unwieldy, indicating a need for further refinement. Byrne (2022) cautions that too many themes can complicate analysis, while too few may restrict its depth and scope.

A recursive review of provisional themes (Braun & Clarke, 2012, 2020) was conducted, guided by Byrne's (2022) two-level approach: examining relationships between data items and codes within themes, then assessing themes against the entire dataset for coherence. This process led to a new theme, T2: The Impact of Self-Directed Learning for the Individual, which explores how self-directed learning affects personal development, skills, attitudes and learning approaches. Braun and Clarke (2013) note that themes need not cover all data but should focus on the research question, allowing exclusion of less relevant codes. To improve rigor, the redundant or overlapping codes were consolidated or removed, streamlining the dataset, as per Figure 15. Ultimately, eleven overlapping themes merged into one cohesive theme and fifteen codes were reduced to seven.

Theme Reference	T2: The Impact of Self-Directed Learning for the Individual
Refined Codes	Justification
T2 Code1a: External Influences on Motivation	Combines T2 Code1a (Influence of external factors on learning motivation) and T2 Code4a (Self-Esteem: Belief in one's own ability to learn and succeed independently).
T2 Code2a: Problem-Solving and Confidence	Merges T1 Code3a (Problem-Solving & Motivation) and T3 Code3b (Connection between independent learning capabilities and confidence in problem-solving abilities).
T2 Code3a: Emotional Response	Merges T4_ST1 (The Joy of Progress and Growth) and T4_ST2 (Experiencing Personal Growth).
T2 Code4a: Impact of Social Context	Unifies T5 Code6d (Impact of social factors on SDL) and T3 Code3b (Collaboration as a digital skill enhancing SDL).
T2 Code5a: Self-Directed Learning as a Process	Includes T1 Code2a (Independent learning as a process of defining what needs to be learned) and T1 Code2b (Self-directed problem definition in professional contexts).
T2 Code6a: Interest, Motivation and Engagement	Refines T4 Code3a (Motivation, interest and engagement in SDL, including ADHD challenges).
T2 Code7a: Practical Application	T3 Code1a (Specific project-based learning, e.g., HTML for website development).

Figure 15: Theme and code generation post-refinement.

4.2.5 Phase Five: Defining and Naming Themes

Braun and Clarke (2013) view this phase as a quality control step, ensuring provisional themes align with both coded data and the overall dataset. In addition, Braun and Clarke (2012, p. 65) recommend key probes to evaluate themes based on relevance, clarity, data support and coherence. Byrne (2022) highlights a two-level review: first, examining relationships between data items and codes within themes and second, assessing themes across the dataset. Similarly, Patton (2015) suggests evaluating categories for internal consistency and external distinctiveness. Together, these reviews ensure codes properly inform themes and themes effectively interpret the dataset (Braun & Clarke, 2006).

The dual-level review often prompts restructuring, with themes or sub-themes adjusted by adding or removing codes or entire categories (Byrne, 2022). An initial review identified “Challenges with Independent Learning” as a prominent theme across seven of nine interviews, notable for its impact on learner engagement and success. Four sub-themes were developed to address the personal effects of challenges, digital obstacles, coping strategies and outcomes of successful mitigation. Visual thematic maps are useful for exploring and refining relationships between codes, themes and sub-themes (Braun & Clarke,

2006, 2013). Figure 16 presents a map from early analysis stages, illustrating the main theme “Challenges with Independent Learning” and its four interrelated sub-themes – personal effects, technical challenges, strategies to overcome challenges and outcomes of overcoming challenges – highlighting their connections and collective significance.

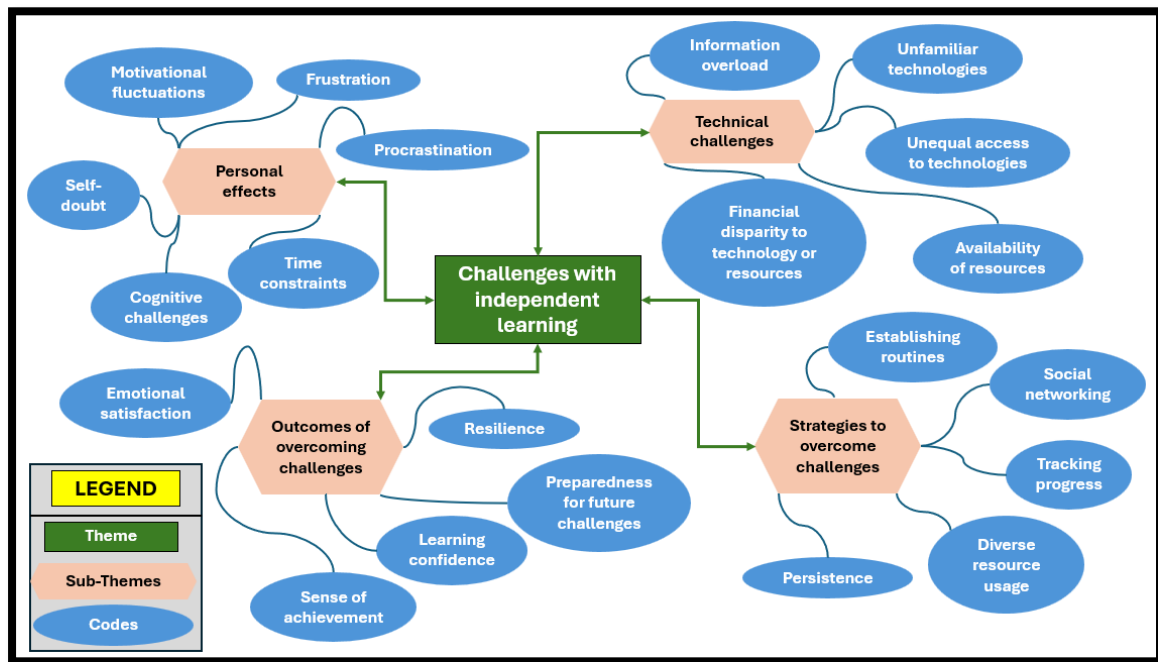


Figure 16: Dual-level thematic analysis of a theme within a thematic map.

Interviewees shared diverse perspectives on the challenges they experienced with digital resources, noting the effects on their independent, self-directed learning. In exploring the topic of challenges, participants were asked about specific instances where they encountered difficulties using digital tools or technologies. One participant responded:

“Yep...<PAUSES>...the main hurdle or obstacle I always had is the paying for technologies which are quite necessary for my studies or self-learning.”
(Interviewee 7, transcript timestamp 14:30).

Conversely, another participant offered a contrasting perspective on the same question, focusing on a specific website they use for independent learning. Their response was as follows:

“It’s an online site, so it’s website where they have online courses and basically everything you could ever think of. You have to buy the course. But they’re very, very, very cheap <REPITITION MADE WITH EMPHASIS EACH TIME>, like probably like a tenner each course. And right now I’m very lucky because I get all the courses for free in my company where I’m doing my placement. So it’s great.” (Interviewee 2, transcript timestamp 13:09).

These contrasting experiences highlighted a significant disparity in access to digital learning resources based on financial means. This inequitable access underscores the importance of considering socioeconomic factors when examining digital tools or technologies and independent learning, as even motivated and digitally competent individuals can be hampered by a lack of affordable resources.

The dual-level review also highlighted a sub-theme centred on the tangible outcomes of successfully navigating digital-related obstacles in learning. In exploring this, interviewees were asked to reflect on a time they learned something independently and to describe the resulting feelings. One participant stated:

“I would say like you know, in that way I would have felt really good about myself and really build up my confidence.” (Interviewee 3, transcript timestamp 10:01).

Reinforcing this subtheme, another participant reported that their experience with digital technology led to a noticeable improvement in their skills related specific tasks, ultimately boosting sense of achievement. They stated:

“that is very rewarding where you feel, jeepers <MILD EXCLAMATION OF SURPRISE OR SHOCK IN TONE> technology has really helped me to achieve my goal and be more effective in my work, my task at hand”. (Interviewee 6, transcript timestamp 45:29).

Strategies for overcoming challenges materialised as a key subtheme from the dual-level review, with persistence emerging as critical attribute for independent, self-directed learning. Participants shared their experiences of attempting to find the information they needed, depicting the process as a persistent struggle and sustained effort and how they coped with it. They reported:

“I probably say...<PAUSES> Well, yeah, you, get a little bit less motivated, I’ll say that, especially when you know you were really going through this resource and then you find out it wasn’t where you were looking for it probably wasted a bit of time... <PAUSES> ... but, you know, if I have something in mind that usually keep going, I’m very stubborn <AFIRMATION IN TONE>, so kind of builds resilience” (Interview 2, timestamp 14:43)

and

“in my opinion, if I were at that point I would keep pushing myself. No, I have to do that thing. I have to push myself and I have to find out the new path or new way to get that thing done <DETERMINED TONE>” (Interviewee 7, transcript timestamp 16:05).

The initial readings highlighted strategies for managing these challenges in digital learning, emphasising the importance of perseverance and a strong will to succeed despite adversity.

The dual-level review identified a fourth subtheme, which examined the impact of challenges with independent learning on individuals. Time pressure emerged as a critical contextual factor in professional applications of independent learning, particularly in situations requiring rapid knowledge acquisition and application to

meet urgent operational demands. For example, this specific participant highlighted the necessity of quickly identifying relevant and practical information, stressing the importance of effective technology use in this process in their professional practice:

“I have to try and find out very quickly what are latest and real tangible things that that I need to do.... Knowing how to search effectively with the technology tool is part of it” (Interviewee 6, transcript timestamp 4:32).

In another interview, a participant candidly acknowledged the influence of time pressure on their learning approach, noting:

“So sometimes after procrastinating, I’m like, ‘OK I I need to get this done in like a day’ and I can have so many things to do <STRESSED TONE>. I can’t give one hour to each, so I just like 5-10 minutes video and quick to do it and learn it in that specific time” (Interviewee 1, transcript timestamp 12:30).

These perspectives highlighted how time constraints shape learning strategies, often leading to the adoption of rapid and efficient learning methods.

Following the dual-analysis review, this identified theme and its subthemes were included as initial findings based on the consistent presence across participants’ accounts. This is in keeping with the principles of thematic analysis (Braun & Clarke, 2012), where themes are identified based on their relevance to the research question and their recurrence across the data set (Braun & Clarke, 2006, 2013; Clarke & Braun, 2017). The approach also reflects a phenomenological perspective, which seeks to understand and interpret individuals’ subjective experiences (Creswell, 1998; Denscombe, 2014), by grounding the analysis in participants’ perspectives upholds phenomenology’s focus on meaning-making and the rich exploration of lived experiences (Moustakas, 1994; van Manen, 1997, 2014).

Reviewing candidate themes is a critical step in which themes and codes are confirmed, revised or removed, requiring flexibility and openness to discarding elements that do not align with the data (Braun & Clarke, 2006, 2013). During this re-examination step, content related to learning in the university context appeared potentially redundant. Several interviewees described experiences in structured settings, such as lectures or using library resources, that overlapped with insights already captured in other themes. For instance, when asked about factors that enhanced their learning, one participant shared:

“There are lectures that...<PAUSES>..., I think college can be a little bit tiring sometimes. You’re in at 9:00 and then you go by 6pm and you just get a little bit exhausted in the middle. And lectures are sometimes not that effective”. (Interviewee 1, timestamp 16:22).

Other participants on sharing their perspectives on their learning experiences also referred to formal learning examples, stating:

“I can rely on just on, you know, the notes from my lecture”. (Interviewee 2, timestamp 28:06)

and

“It would make it easier if, like, lectures and instructors gave us, because they do recommend books...<PAUSES> but sometimes they don’t, or the books maybe are not as like, student friendly”. (Interviewee 3, timestamp 26:07).

Because these traits encapsulate learning in formal, structured and controlled learning environments, having university context as a theme was deemed to be of little or no significant value, so therefore were disregarded post-review.

4.2.6 Phase Six: Producing the Report

This phase should conclude with a clear, cohesive set of themes and an understanding of their interconnections and the overall narrative they reveal (Braun & Clarke, 2013). Byrne (2022) notes that the boundary between phases five and six is often blurred, as phase six involves a recursive process of refining and reviewing the report. Unlike quantitative research, where analysis precedes writing, qualitative research involves an ongoing interplay between analysis and writing (Braun & Clarke, 2012). As themes and codes evolve, the write-up also develops and these changes should be documented through informal notes and memos (Byrne, 2022).

4.3 Findings Overview

Independent, self-directed learning is a vital skill that enables individuals to engage with diverse sources, including digital media, as part of lifelong learning. As technology becomes increasingly embedded in daily life, it is essential to understand the factors that influence this form of learning and the role digital competencies play. These findings highlight key aspects: the personal attributes that drive self-directed learning, the internal and external factors that shape it, the evolving relationship between digital competency and autonomy and the influence of technology and community. Together, they offer a clearer picture of how self-directed learning can be effectively supported in the digital age.

The analysis of participant interviews revealed three key findings that collectively enhance understanding of how digital competencies function as enablers to heutagogical learning, shown in Figure 17. These findings highlight not only the practical role of digital competence in facilitating access to resources and managing learning tasks but also the more nuanced, often subconscious ways individuals navigate self-directed learning experiences. Participants described a range of internal and external influences - such as confidence, digital fluency, institutional support and personal motivation - that either supported or impeded their progress.

From a phenomenological perspective, these findings underscore the importance of exploring how learners experience self-directed learning and attribute meaning

to their engagement with digital tools in everyday learning contexts. As phenomenology seeks to uncover the essence of lived experiences (Moustakas, 1994; van Manen, 2014), this analysis reveals how digital competencies are not merely technical proficiencies, but integral to learners' sense of autonomy, agency and identity as independent, self-directed learners. The dynamic interplay between digital competence and learning autonomy is thus both a cognitive and existential experience, shaped by how learners perceive, interpret and act within their independent learning environments.

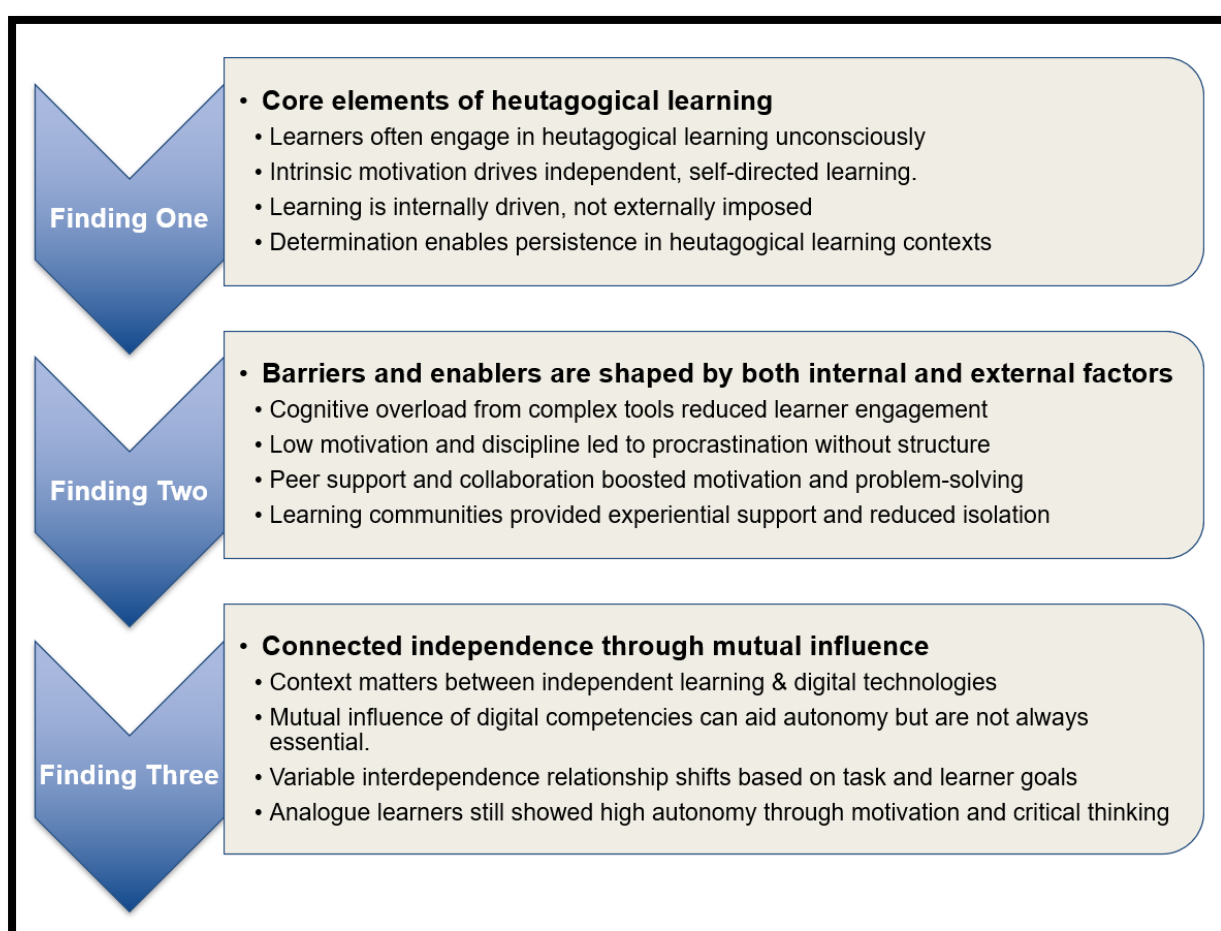


Figure 17: Findings overview

Finding one explores how learners often engage in heutagogical learning without explicitly recognising or labelling it as such. This unconscious engagement highlights the significance of personal attributes - such as intrinsic motivation, resilience and curiosity - as central drivers of independent, self-directed learning. From a phenomenological perspective, this suggests that learning in a

heutagogical context is deeply embedded in the lived experience of learners; it is not necessarily a deliberate strategy, but rather a way of being and responding to educational challenges. The meaning learners attach to their actions is shaped through reflection and experience, not merely through formal definitions.

The second finding examines the barriers and facilitators that shape learners' capacity to pursue and accomplish independent learning. These include both internal factors - such as confidence or fear of failure - and external influences like educational environment structures, digital access or peer support. In keeping with phenomenological inquiry, this finding reflects how learners interpret and respond to these enablers and obstacles within their personal contexts. Their subjective experiences inform not just what they learn, but how they come to understand their place and agency within the learning process.

The third finding reveals that while digital competencies and learning autonomy frequently develop in tandem, the relationship is not universally reciprocal. In some cases, learners may exhibit strong digital competency without a corresponding sense of autonomy, or vice versa. However, for many participants, growth in digital competence often reinforced their sense of independence and vice versa, reflecting a dynamic, co-evolving relationship. This interplay aligns with the phenomenological focus on how individuals' experiences develop over time, illustrating how competencies and autonomy emerge from a continual process of engagement, reflection and adaptation within the learning environment.

Collectively, these findings offer a nuanced understanding of how personal agency, digital competencies and the broader learning context intersect within the lived experiences of learners in a heutagogical context. From a phenomenological viewpoint, this convergence reflects more than just observable behaviours, it captures the subjective meanings that learners attach to their experiences, motivations and challenges as they navigate their own independent self-directed learning journeys.

In a phenomenological context, heutagogical learning is not simply a set of actions or strategies, but a way of being - a dynamic, evolving relationship between the learner and their environment, shaped by intention, reflection and meaning-making. The participants' narratives illustrate how personal agency emerges through their capacity to make choices, adapt to challenges and pursue learning goals autonomously, often in response to internal drives like curiosity, resilience and motivation.

Digital competencies, similarly, are experienced not only as skills or abilities, but as enablers of confidence, connection and autonomy. Participants' experiences reveal how these competencies are embedded in daily life and learning, often shaping their sense of control and empowerment in independent learning contexts. For some, technology opens new avenues for exploration and expression; for others, it poses barriers that must be negotiated. These experiences are deeply contextual and individual, reinforcing the phenomenological idea that meaning is formed through lived experience rather than imposed structures. The wider learning setting, whether supportive or limiting, also plays a key role in shaping how learners experience and enact their independence. Instructional supported learning environments and structures, access to digital tools and resources and the presence or absence of support networks influence not only what learners can do but how they feel about and experience in their learning journeys.

Consequently, by grounding the analysis in participants' own words and reflections, these findings uphold the core phenomenological aim: to illuminate the essence of an experience as lived from the individual's perspective. They provide insight into how heutagogical learning is not just practiced but experienced, as an interplay of identity, capability and environment, highlighting its personal, relational and contextual dimensions.

4.4 Finding One: Core Elements of Heutagogical Learning

An exploration of learner experiences revealed that learning in heutagogical contexts frequently occurs unintentionally, with individuals engaging in

autonomous learning behaviours without consciously recognising the skills or attributes they are employing or developing. While participants did not always explicitly label their actions as self-directed learning, they described behaviours consistent with it, such as self-initiated problem-solving, time management and resource navigation, indicating an implicit, rather than explicit, engagement in the learning process.

From a phenomenological standpoint, this highlights how self-directed learning is often embedded within the lifeworld of learners - their everyday lived experience - rather than existing as a formal, clearly defined learning activity. Learners may not consciously frame their actions as 'learning' because these processes are woven into their habitual ways of being and acting in their learning environments. The tacit nature of this engagement means that learners make sense of their experiences and capabilities through embodied and pre-reflective awareness, where skills are enacted intuitively rather than explicitly acknowledged.

This implicit dimension aligns with phenomenology's emphasis on the taken-for-granted structures of experience, where meaning arises not only from conscious reflection but also from the seamless integration of cognition, motivation and action in context. By uncovering these often unnoticed, yet meaningful, learning behaviours, the study illuminates how self-directed learning is lived and experienced as a natural, fluid part of learners' interactions with their environment and challenges. Figure 18 outlines the core elements and defining characteristics of heutagogical learning, as revealed by the study's findings within a phenomenological context.

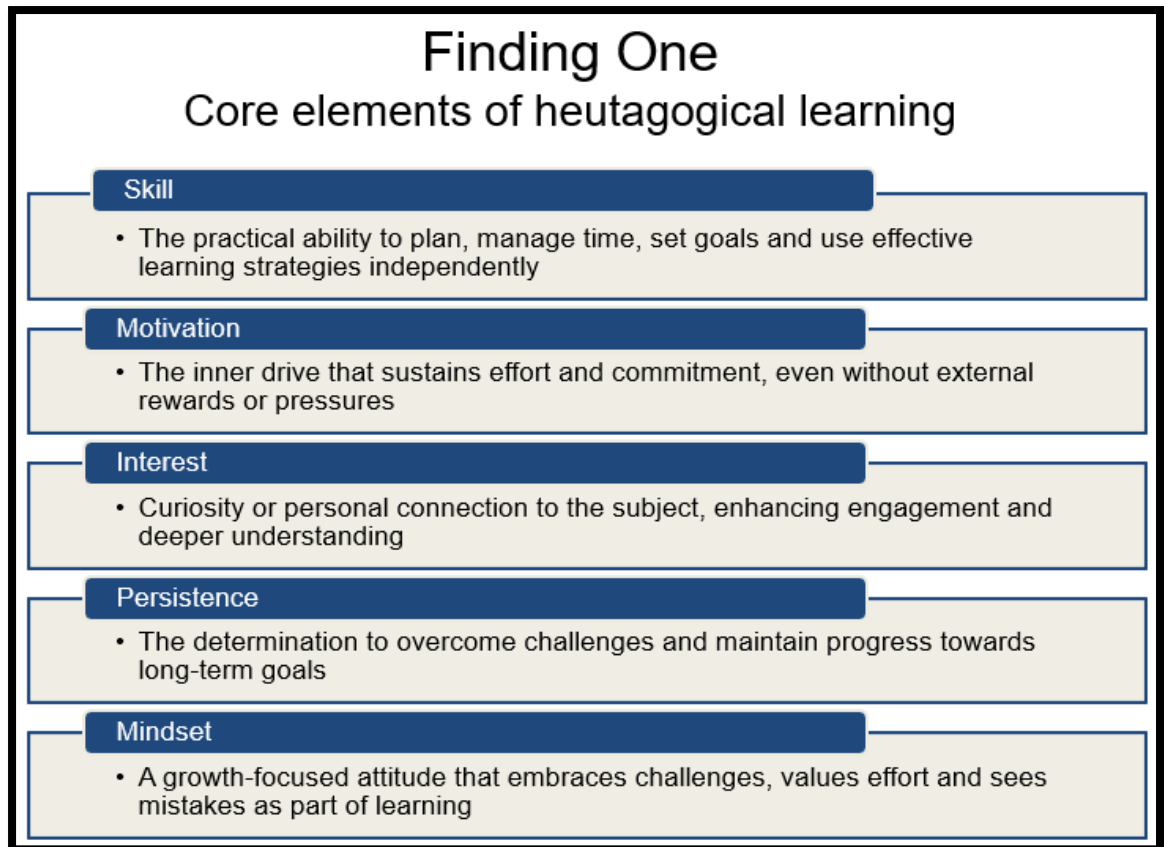


Figure 18: Finding One: core elements of heutagogical learning

A central insight of this phenomenon is the organic emergence of personal attributes essential to self-directed learning. Across participant accounts, qualities such as a strong sense of internal drive, rooted in intrinsic motivation, curiosity and personal interest, which often served as the catalyst for their engagement, emerged. These internal motivators appeared to sustain commitment even in the absence of formal structure or external accountability. This internal drive, though not always articulated, served as a sustaining force in their independent learning efforts. One participant emphasised the role of personal interest as a prerequisite for engagement:

“I have to have some kind of interest in it or else it's like, there's no kind of reward for it” (Interviewee 5, timestamp 5:12)

and later noted,

“the drive to, the kind of, the motivation to do it” (Interviewee 5, timestamp 5:37).

This connection between interest and persistence emerged as a recurring pattern, suggesting that learners' passion for the subject matter plays a critical role in maintaining their momentum in independent learning contexts. Further findings indicated that learners unconsciously developed practical and dispositional skills such as initiative, time management, adaptability and resource evaluation. These competencies were often articulated through reflective commentary, as in the case of one participant who noted:

“Well, I think well, you need to have some initiative” (Interviewee 2, timestamp 0:48)

and expanded by explaining:

“You need to have some skills to know where you can find your resources... how you can look for those resources” (Interviewee 2, timestamp 1:40)

and

“you’ll probably need to organise your time” (Interviewee 2, timestamp 2:16).

Despite demonstrating these skills, participants rarely described them as learned or intentionally cultivated. Instead, these attributes appeared to evolve through repeated, situational learning experiences. The finding highlights the iterative nature of skill development, where competencies are refined through continued practice rather than formal instruction. Notably, while learners showed high levels of engagement and capability, their lack of awareness of these underlying attributes limited their ability to reflect on or transfer these skills intentionally. This gap in metacognitive recognition suggests that while learners may succeed in directing their own learning, they may not fully understand how they are doing so or why they are effective. Through a phenomenological lens, this unconscious

development of personal learning attributes is noteworthy. It reveals that heutagogical learning is often enacted rather than acknowledged, shaped by subjective experience rather than strategic intent. While participants exhibited strong autonomous behaviours, the implicit nature of their approach may hinder long-term growth or adaptability if these behaviours remain unexamined.

This finding suggests that while personal attributes like motivation, resilience, initiative and self-regulation are deeply intertwined with independent, self-directed learning, they are not always visible to the learner. As such, heutagogical learning can thrive without explicit awareness, but recognising and nurturing these underlying attributes could significantly enhance learner agency, future success and the capacity to adapt across diverse learning environments.

4.5 Finding Two: Barriers and Enablers to Heutagogical Learning

This study reveals that heutagogical learning is shaped by a complex interplay of internal and external factors that can either hinder or enable learner progress, illustrated in Figure 19. Through an exploration of participant experiences, a range of obstacles and supports were identified, reflecting the dynamic nature of independent learning in digital and non-digital contexts.

Viewed from a phenomenological angle, the study centres on the lived experiences of learners, emphasising how these factors are not merely external conditions or internal dispositions, but are experienced subjectively, infused with meaning and shaped by personal history, meaning and perception. For example, a digital barrier is not only a technical limitation, but it may also be experienced as frustration, disempowerment or exclusion, depending on the individual's relationship with technology. Conversely, digital proficiency may be perceived as a form of confidence-building, autonomy and agency.

Finding Two Barriers in heutagogical learning

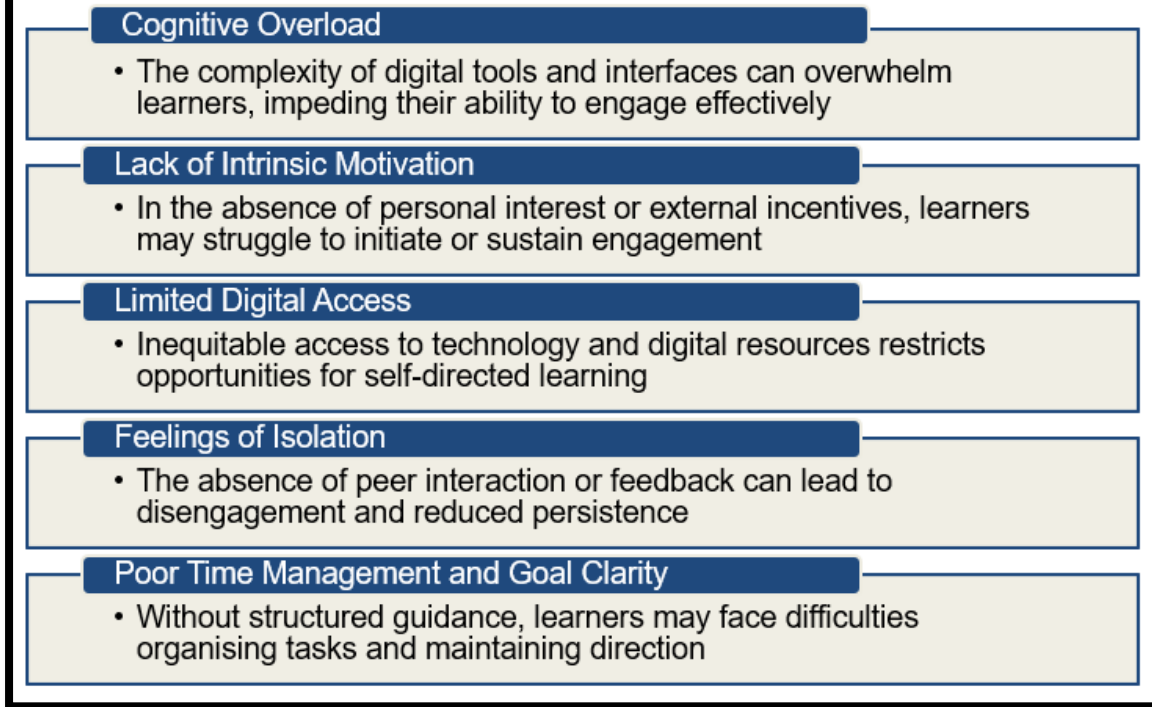


Figure 19: Finding Two: barriers in heutagogical learning

By centring participants' voices, the study captures the felt complexity of navigating self-directed learning, by how learners interpret their capabilities, how they respond to challenges and how they make sense of their learning trajectories. In this way, the findings align with the study's phenomenological objective to understand the meaning of experience as it is lived, rather than an abstract or categorised encounter. The insights presented here contribute not only to an understanding of the mechanics of independent, self-directed learning, but also to its emotional, cognitive and pragmatic dimensions.

Participants reported numerous challenges that disrupted their ability to engage in or sustain self-directed learning. These barriers included both technological and psychological dimensions. A recurring issue was cognitive overload caused by highly complex digital tools and technologies. One participant described this challenge when attempting to use sophisticated software:

“There’s a tool called Blender... I tried to learn it, but it was just too overwhelming... there’s so <EMPHASIS> much functionality” (Interviewee 7, timestamp 19:38).

Similar challenges emerge with other software:

“The other one was Photoshop as well. Like, I always try to go to learn Photoshop to make, like, some maybe designs or things like that...<PAUSES>... but it’s very, very overwhelming” (Interviewee 7, timestamp 20:32).

This pattern of attempted learning followed by abandonment due to complexity highlights a significant barrier to independent skill development. The recurring description of tools as *“overwhelming”* suggests that interface complexity and feature density create substantial obstacles to self-directed learning despite the availability of instructional resources. This finding reveals how feature-rich applications can paradoxically inhibit learning through cognitive overload, creating barriers that discourage continued engagement.

Additionally, a lack of intrinsic motivation and self-discipline emerged as key barriers. Without external deadlines or structured guidance, some learners struggled with procrastination and time management. The absence of clear learning goals further compounded this, as participants found it difficult to maintain direction without defined objectives. Limited access to digital tools or online resources was another constraint, particularly for those in lower-resource environments. This digital divide impeded equitable engagement in independent study and reinforced broader issues of access and opportunity. Participants also reported feelings of isolation and frustration, particularly in the absence of peer feedback or collaborative learning. Without interaction or affirmation, learners navigating complex content alone experienced decreased enthusiasm and engagement.

Conversely, several key facilitators supported learners in navigating heutagogical learning successfully, as outlined in Figure 20. These included intrinsic motivation, access to digital tools, prior digital experience, social encouragement and structured yet flexible independent learning goals and objectives. Taken from a phenomenological point of view, these enablers are not just external supports but are interpreted through the learner's lived experience. The sense of digital confidence, for example, often emerged from meaningful past interactions with technology, where competence was felt as empowering rather than merely functional. Similarly, support from peers or forum communities was experienced not just as help, but as affirmation of agency and capability, deepening the learner's sense of autonomy. Such enablers reflect how participants made sense of their learning environments and internal capacities, aligning with phenomenological approaches that focus on how individuals interpret and give meaning to the conditions that shape their learning outcomes.

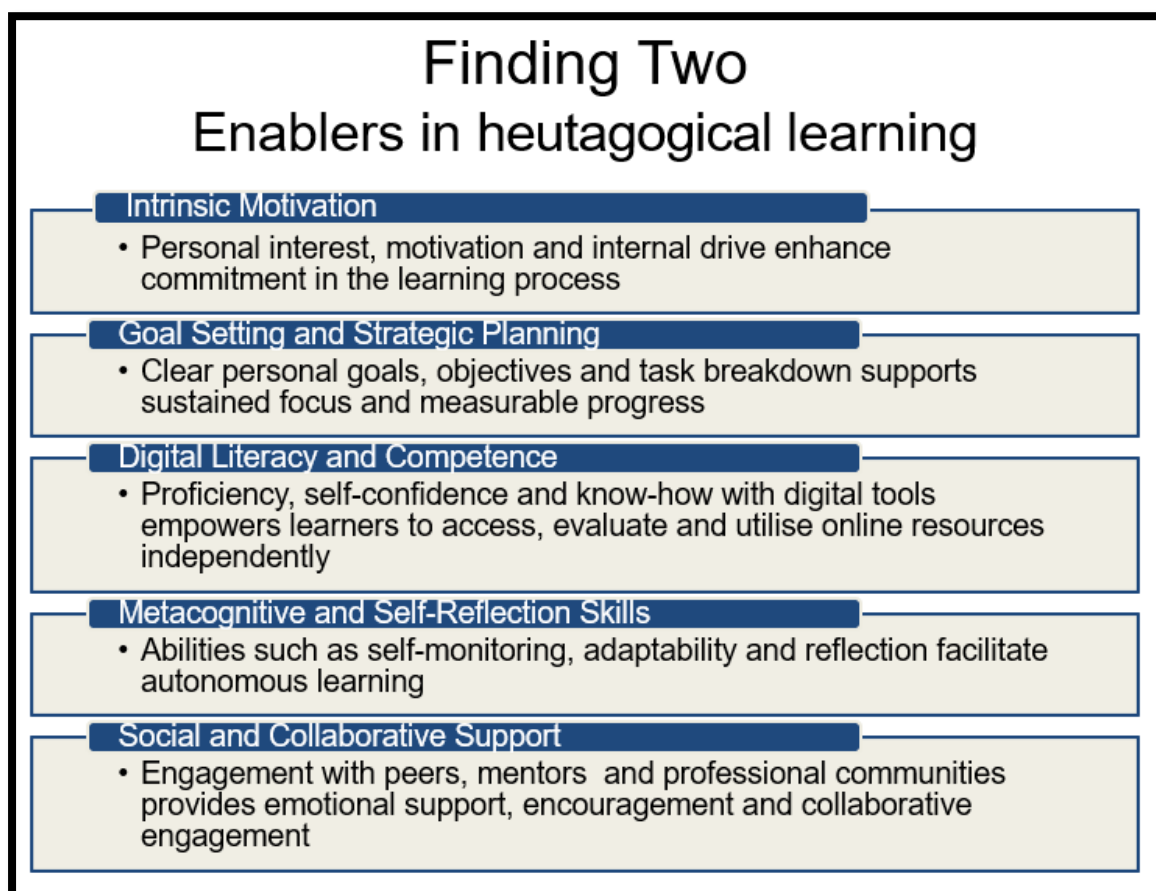


Figure 20: Finding Two: enablers in heutagogical learning

The most consistent enabler across interviews was intrinsic motivation, a deep personal interest or curiosity that sustained effort even in the face of obstacles:

“For me, it would kind of have to have a little a little reward at the end of it to be like, ‘oh, look, you’ve learned this’<TONE PITCH>” (Interviewee 5, timestamp 5:37)

and

“there were a few purposes of doing those new things. First was my interest. Obviously the second was in my case it was academic” (Interviewee 7, timestamp 6:30).

Learners driven by passion demonstrated greater resilience, perseverance and initiative. Additionally, goal clarity and structured planning were instrumental in helping learners stay focused and track progress. Those who broke tasks into manageable steps reported greater motivation and productivity. Self-regulation skills, including time management, metacognitive awareness and the ability to monitor and adjust learning strategies, were closely associated with successful heutagogical learning. These traits allowed learners to maintain momentum and autonomy throughout the process. At the same time, learners' interactions with technology often catalysed the development of new digital competencies. As they engaged with unfamiliar tools, such as software applications, collaborative platforms or digital content creation, they acquired new skills organically, driven by the demands of their self-directed learning pursuits.

In digitally mediated learning environments, digital competencies such as information literacy, platform navigation and online communication emerged as crucial enablers of self-directed learning. Participants frequently described how their ability to utilise digital tools expanded their autonomy by facilitating access to resources, structuring their learning and enabling collaboration. In this context, digital competency functioned not merely as a technical skillset but as a scaffold for independent learning. Participants who demonstrated confidence in

navigating digital platforms often leveraged these skills to explore learning pathways that were personalised and adaptive. This digital competence enhanced learners' autonomy by reducing barriers to engagement and broadening their access to knowledge networks and instructional content.

Contrary to traditional portrayals of self-directed learning as a purely individual endeavour, participants described a strong reliance on social learning strategies, particularly peer consultation and collaborative support. One interviewee reflected:

"I reach out to other people that, at that time, were going through the same process and also, as a professional in the industry... < PAUSED > ... just to see how they acquire their knowledge, how they practised" (Interviewee 4, timestamp 4:42).

Another participant emphasised the motivational and practical value of peer support:

"having that group there supporting each other, sending material to each other. On specific topics that also helped a lot to motivate each other" (Interviewee 9, timestamp 19:35)

with a similar sentiment echoed by another interviewee as:

"...consult your friends and then try online resources to get to what you want" (Interviewee 1, timestamp 17:36).

These insights highlight how peer communities act as dynamic learning environments, supporting the exchange of knowledge, sustaining motivation and facilitating shared problem-solving. In such environments, learning was not exercised in isolation but was co-constructed through interaction and collaboration. Digital tools also served as bridges to professional and learning communities, enabling learners to connect with others pursuing similar goals or

operating within the same field and were cited as positive enablers. This connectivity fostered experiential and situated learning, where learners drew on the collective wisdom of their peers and mentors to inform their own trajectories. For several of the participants, engaging with these communities was a deliberate strategy for navigating complex or unfamiliar learning landscapes. Participants valued online platforms that provided diverse learning materials, collaborative features, learning direction and asynchronous flexibility, with one participant commenting:

“Social media platforms ... they direct you to the right path, sometimes lead you to where you want to be, which is quite good” (Interviewee 1, timestamp 31:18).

When paired with strong internal drive, these tools expanded learning opportunities and engagement. These social and community support structures played a key role, as an avenue to provide feedback, encouragement and a sense of connectedness that buffered against isolation and cognitive fatigue. One participant noted:

“From time to time, sort of seeing or working alongside other people who are good at working in a particular way and picking up and learning some things from them” (Interviewee 6, timestamp 2:45)

and another participant commented:

“all of these tools probably have communities online and you know, forums that could be probably the quickest way to ask for help” (Interviewee 2, timestamp 21:37).

These findings highlight the nuanced interdependence between internal (learner-driven) and external (contextual) conditions. While personal attributes like motivation, curiosity and resilience form the foundation for self-directed learning, their effectiveness is often mediated by environmental affordances such as

technological accessibility, instructional design and social interaction. Importantly, the relative influence of these factors is context dependent. In digitally intensive tasks, external scaffolding becomes more critical, whereas intrinsic motivation dominates in self-initiated, interest-driven projects. This balance shifts according to the learner's goals, experience and situational challenges.

4.6 Finding Three: Interdependence Through Mutual Influence

This study revealed a nuanced, context-dependent relationship between heutagogical learning and digital competencies, as outlined in Figure 21. While these domains often intersect and can mutually reinforce one another, where growth in digital competencies, digital skills and digital literacy enhances learning autonomy and vice versa, their interdependence is neither universal nor uniform. Instead, their interaction varies according to individual learner profiles, the specific demands of the learning task and the broader educational or social environment.

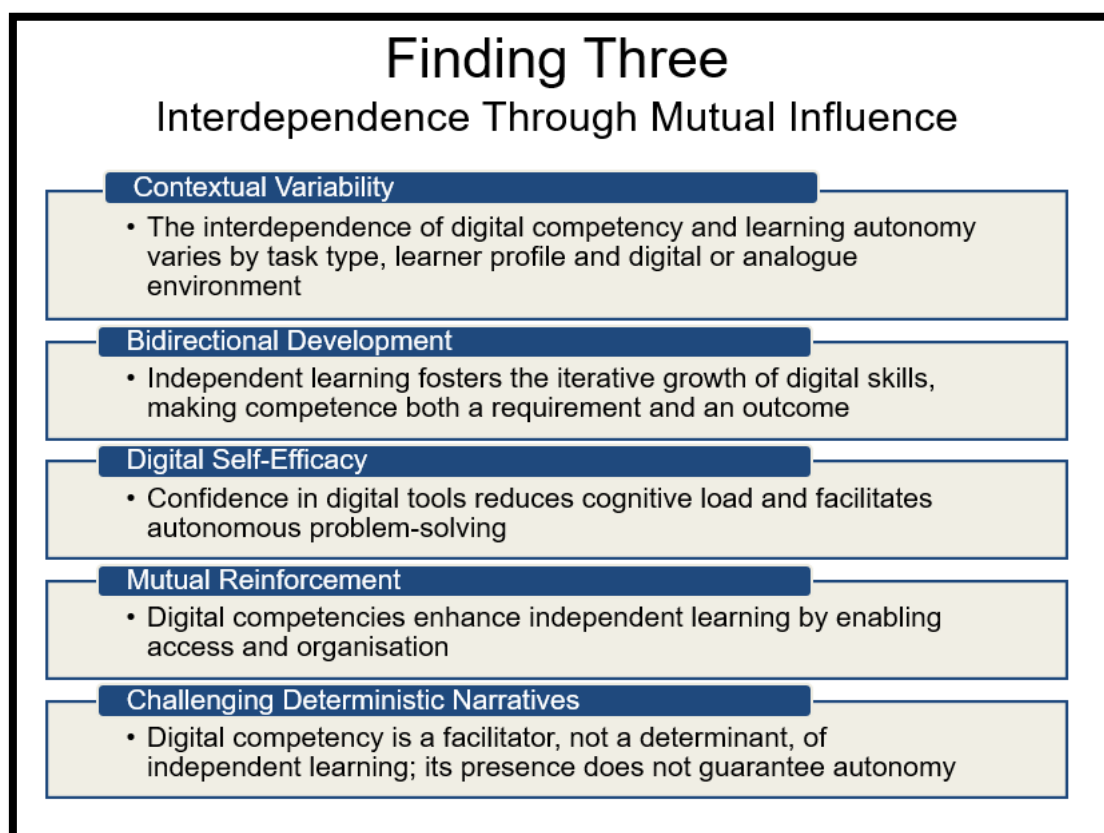


Figure 21: Finding Three: interdependence through mutual influence

Phenomenologically, this variability underscores the importance of understanding how learners experience the relationship between digital competence and heutagogical learning. For some participants, digital tools and technologies were perceived as enablers of freedom, confidence and resourcefulness, qualities central to their identity as independent learners. For others, limited access or negative past experiences with technology created a sense of constraint or disconnection, regardless of their motivation or intent. As such, the relationship between these domains is not merely structural but experientially constructed. Learners' interpretations of their capabilities, tools and challenges reflect the subjective meaning they assign to learning in digitally mediated contexts. By revealing these lived experiences, the study illustrates how digital competence and independent, self-directed learning co-evolve through personal meaning-making within situated learning contexts.

A recurring experience across participant narratives was the role of digital competencies in facilitating autonomous learning. Skills such as navigating online platforms, critically evaluating information and using digital communication tools enhance learners' ability to independently access, organise and engage with learning materials. One participant articulated a strong sense of digital self-efficacy, grounded in prior experience with technology:

"I've been on computers for a lot of my life, so I feel like I already have a lot of those skills and I have literacy already" (Interviewee 9, timestamp 10:47).

This confidence enabled a seamless integration of digital tools into their learning practices, minimising technological friction and allowing for greater focus on content. Their approach to problem-solving, frequently turning to online resources for immediate answers, underscored this self-reliant orientation:

"If I don't know something, I will Google it... an error code - immediately go on Google" (Interviewee 9, timestamp 11:36).

Such accounts illustrate how digital self-efficacy can reduce cognitive load, foster independent exploration and enhance learner autonomy in technology-rich environments. Conversely, participants also demonstrated that the process of engaging in self-directed learning often promotes the development of digital skills. As learners navigate digital environments to meet their goals, they refine their ability to search, evaluate and apply information across platforms. This iterative engagement builds competence over time, making digital skill acquisition an outcome as well as a precondition of self-directed learning. Importantly, the degree of interdependence between these domains varies significantly by context. In digital or hybrid environments, digital proficiency becomes almost essential for effective self-directed learning. In these settings, technological fluency shapes learners' ability to access resources, communicate with others and manage their learning processes.

Despite the strong presence of digital technologies in many learning narratives, participants also reported contexts where digital competencies played a minimal role. In traditional, analogue or hands-on learning scenarios, such as reading books, engaging in creative practice, or conducting tactile, hands-on based inquiry, self-directed learning flourished without significant technological intervention. For instance, one participant remarked:

"I made some just simple squares when I first wanted to learn stitches and crochet and then just kind of practising...and when I was kind of happy with that one thing, I would trace pictures and I would just try to just make an image or do a little piece and then sort of make what I had in my mind come to life. So it was just, like, I'll just make it and see how it goes...<RELAXED TONE>" (Interviewee 4, timestamp 7:21).

Here, intrinsic motivation, reflective practice and critical thinking emerged as the primary enablers of independent learning. Furthermore, some learners with lower digital dependency, demonstrated strong autonomy by relying on offline strategies and resources and exhibited high levels of independence by drawing

on personal qualities such as intrinsic motivation, curiosity and critical thinking, as highlighted by one participant by stating:

“I really like to learn using books... so finding a book that's good, you know, going through loads of books and going through the contents page and flicking around like that kind of stuff” (Interviewee 3, timestamp 2:04).

These cases underscore the fact that digital competency, while often advantageous, is not an essential condition for effective heutagogical learning. Learning autonomy can emerge from diverse cognitive, emotional and social capacities that do not necessarily depend on technology. These findings challenge deterministic narratives that equate digital competency with learning autonomy. While digital tools and technologies can amplify and enhance the process of independent, self-directed learning, they do not singularly define it.

Positioned phenomenologically, the essence of heutagogical learning lies in learner intentionality, the purposeful, self-initiated pursuit of knowledge. The data reveals that while digital competencies may serve as catalysts, they are not the foundation of independent learning. Rather, it is the learner's agency, metacognitive awareness and reflective capacity that drives the process. This distinction is critical for understanding the lived experience of learners. For some, digital resources are essential enablers; for others, they are supplementary, optional tools. The diversity of learning modalities embraced by participants underscores the importance of recognising multiple pathways to independent self-directed learning. This finding underscores the mutual, but not absolute, influence between heutagogical learning and digital competence. In technology-rich environments, their interdependence is pronounced; in analogue settings, their connection may be peripheral. Ultimately, both domains can function independently or collaboratively, depending on the learner's context, goals and resources.

4.7 Findings Synopsis

The findings of this study, summarised in Figure 22, reveals a complex and context-sensitive relationship between self-directed learning, digital technologies and social networks. While self-directed learning is often conceptualised as an individual and solitary pursuit, participants' lived experiences highlight a more relational and interconnected dynamic, one in which technologies and communities serve as integral enablers of autonomous learning. From a phenomenological standpoint, these findings highlight the situated and multifaceted nature of self-directed learning. Participants' experiences of autonomy were not shaped in isolation but were deeply embedded in both technological landscapes and social relationships. For some, digital fluency and access to online networks played a pivotal role; for others, it was the strength of interpersonal support and an enduring sense of personal agency that enabled independent learning.

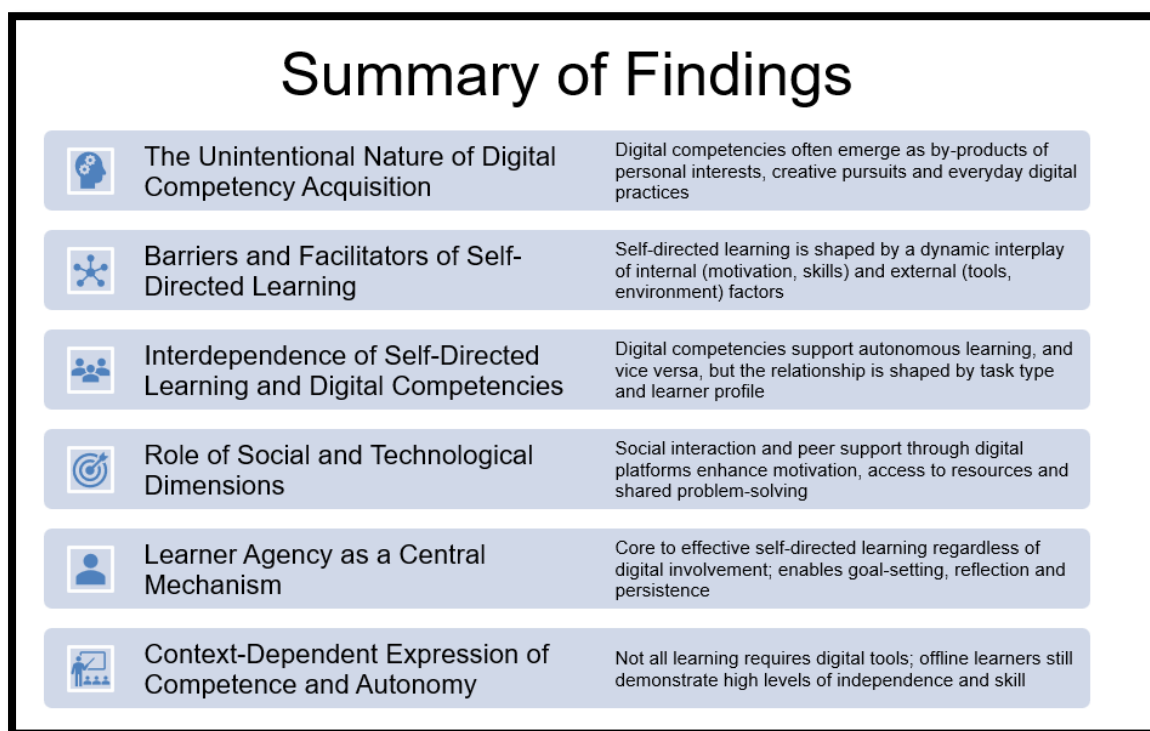


Figure 22: Summary of findings

This diversity of experience complicates linear models that position digital competency as a singular route to autonomous learning. Instead, the data points

toward a more nuanced understanding, one that recognises autonomy as emerging through diverse, context-sensitive routes. Learners developed independence not solely through mastery of digital tools and technologies, but also through social exchange, emotional support and reflective engagement.

The interconnections between technologies, communities and learner autonomy were shown to be fluid and evolving rather than fixed. While digital competencies often facilitated access, organisation and collaboration within heutagogical learning, they were not universally essential. Similarly, peer engagement and collective learning strategies frequently enhanced learners' motivation and resilience, underscoring the social fabric that supports independent learning.

By highlighting this concept of connected independence through mutual influence, the study reframes independent, self-directed learning as a relational process. Learner autonomy is not simply a matter of solitary initiative but is shaped through learners' interactions in both human and digital environments.

4.8 Chapter Summary

Rather than viewing digital competency as the sole driver of learner autonomy, this study reveals that independence is fostered through a complex and interconnected web of influences. Social support, emotional connection and reflective practice play equally vital roles in shaping learners' capacity to self-direct. Autonomy is shown to be relational and context-dependent, emerging not just from individual initiative or technical skill, but through meaningful engagement with both digital tools and human communities. This highlights the importance of recognising heutagogical learning as a dynamic and socially embedded process.

Chapter 5: Discussion of Findings

5.1 Introduction

This study set out to address the research question of how digital competencies contribute to the enhancement of independent learning experiences and how the impact of digital competencies on learners' ability to engage in heutagogical learning can be understood. Exploring how participants perceive and make sense of their learning world, this study adopted a phenomenological approach (van Manen, 1997). While findings from this phenomenological research study are not intended to be generalised to broader populations, they can still offer meaningful insights that resonate with other individuals and contexts (Evans & Finlay, 2009). The data was analysed using thematic analysis (Braun & Clarke, 2006, 2012, 2014, 2023; Byrne, 2022), an approach that widely used in qualitative phenomenological studies as it offers a flexible yet rigorous method for identifying, analysing and interpreting patterns of meaning across participants' lived experiences (Braun & Clarke, 2014; Nowell et al., 2017). The key findings emerging from the study encompassed the core elements identified as a basis for heutagogical learning, barriers and enablers to the success of independent, self-directed learning and the mutual influence of, and not the dependency on, digital environments for engagement in heutagogical learning.

5.2 Multi-faceted Nature of Heutagogical Learning

Respondents portrayed heutagogical learning as a personal activity pursued out of natural, intrinsic interest, a sense of responsibility and mainly driven by individual motivation and an inherent willingness to learn. The process of independent, self-directed learning was perceived as an activity that was learner led and managed and completed on one's own time and pace. These elements reflect similar concepts discussed by Brockett and Hiemstra (2018) with self-directed learning viewed as dependent upon a learner's desire or preference for assuming responsibility for learning and refers to both the external and internal characteristics effecting the learning activity. Personal responsibility refers to individuals assuming ownership for their own thoughts and actions and in terms of learning, it is the ability or willingness of individuals to take control that governs any potential for self-direction (Curran et al., 2019). In this study, there were

mixed perceptions concerning what was understood as self-directed learning. Some respondents believed self-directed learning was mainly based upon individualised and autonomous learning on one's own. Others saw self-directed learning as including both informal and nonformal types of learning, incorporating digital elements. These findings support previous research that suggests forms of self-directed learning can be multi-faceted in nature (Hiemstra & Brockett, 2012), involving various activities and resources, such as self-guided reading, participation in study groups, peer collaboration, digital connections and reflective writing activities.

5.3 Phenomenological Insights on Heutagogical Learning

Arising from this study, it was found that participants frequently engaged in self-initiated learning behaviours, such as independently seeking information, managing their learning environment and reflecting on progress, often without explicitly identifying these actions as self-directed learning. Through rich, narrative accounts, it became evident that digital tools and environments enabled access to learning resources, but it was the learners' internal dispositions, such as perseverance, interest and confidence, that stimulated digital competencies in meaningful ways.

This phenomenological study explored how independent, self-directed learners experienced their learning within a digitally mediated context. The study investigated not just what learners did, but how they felt, perceived and interpreted their experiences as independent learners. A key insight that emerged is the nuanced and deeply personal nature of heutagogical learning. Rather than being a fixed or uniform state, independent learning was described through the lived experiences of participants as a fluid and evolving process, shaped by intrinsic motivation, self-efficacy, curiosity and the learner's broader context. Heutagogical learning emerges through the dynamic interaction of cognitive, motivational and metacognitive components, enabling learners to continuously monitor, regulate and adapt their learning behaviours (Knowles, 1975; Saks & Leijen, 2014). Central to this process are control strategies that support metacognitive regulation (Zimmerman, 1989) with a key motivational element

being people's belief in their own abilities to organise and execute actions to achieve certain goals (Bandura, 1986, 1997, 2013). Consistent with Zimmerman and Martinez-Pons' (1990) assertion on self-efficacy, this study found that heutagogical learning is not an absolute functional state but varies depending on the context, personal attitudes and results of behavioural performance. The participants' capacity to self-direct was contingent on both situational demands and their innate belief in their own ability to learn.

5.4 Technological and Psychological Barriers and Enablers

The effectiveness of heutagogical learning depends on many factors, including learners' characteristics, external sources and the context and objective of the learning goal (Schumacher et al., 2013). There has been a surge in the adoption of digital technologies within learning environments with digital technologies and tools facilitating communication, access, transmission and storage of information within digital settings (Lockee, 2021). Digital tools and technologies can potentially foster knowledge acquisition across different knowledge acquisition settings, enabling learners to enhance their independent, self-directed learning processes (Morris & Rohs, 2021). However, inherent challenges and constraints can emerge in the process of harnessing the potential benefits of digital competencies, digital tools and digital technologies to advance active, independent, self-directed learning (Aflalo et al., 2024). Respondents described a variety of barriers that hindered their ability to engage in or sustain heutagogical learning, including both technological and psychological dimensions. Several participants described the challenge of navigating an overwhelming volume of information, expressing difficulty in efficiently filtering and making sense of digital content within limited timeframes, while tackling financial disparities and inequitable access to technologies and resources. Respondents reported the challenge of familiarising themselves with diverse tools while dealing with technological complexities, combined with the process of developing the digital competencies needed to succeed in their heutagogical learning goals. These findings align with Curran et al. (2019) who identified not only access to, but also the effective use of, digital technologies as potential barriers to self-directed learning and the digital literacy and digital skills needed to adeptly navigate the

burgeoning volume of information online and technological resources (Aldahdough et al., 2020; Santos et al., 2019; Spante et al., 2018).

Conversely, the study found a positive relationship between participants' self-perceptions of their digital competencies and feelings of achievement experienced during their heutagogical learning journeys. This finding aligns with Rashid and Asghar (2016), that the use of technology positively influences self-directed learning with Sumuer (2018) echoing the concept that digital tools and open-access digital platforms fosters collaboration, identifying technology as catalysts facilitating independent, self-directed learning.

A distinguishing feature emerging from this study is the increasingly central role that digital competencies and resources play in facilitating and enhancing heutagogical learning. These digital foundations empower learners to access, curate and engage with information autonomously, enabling more personalised and flexible learning experiences. This evolution resonates with Knowles' (1975, 1980) conception of a learning continuum, ranging from teacher-directed instruction to fully self-directed learning, where digital competencies now act as key enablers, helping learners move further along that continuum toward greater autonomy and self-regulation.

5.5 Mediating Role of Digital Tools and Technology in Learning Efficacy

This finding reinforces the idea that while digital competencies can enhance heutagogical learning by supporting peer-based interaction and collaboration, its use primarily mediates - rather than determines - the impact of learners' online communication self-efficacy and technology-based self-efficacy with heutagogical learning. In this sense, this study aligns with Sumuer's (2018) findings, that technology serves as a valuable enabler that can amplify self-directed learning, but it is not an essential prerequisite. Learners' underlying confidence and autonomy remain the foundational drivers of heutagogical learning, regardless of whether digital tools or digital technologies are present or fully utilised in the learning process.

5.6 Competency, Usability and Transformative Capability

With the accelerating pace of technological integration in learning and professional settings, the ability to engage meaningfully with digital tools and technologies - referred to as digital competence - has become increasingly vital (Spante et al., 2018). As an advanced evolution of digital literacy, digital competence is understood through a learning trilogy: (1) competency, or the acquisition of essential digital skills and knowledge; (2) usability, or the application of these skills within specific contexts; and (3) transformative capability, which involves leveraging technology for creative and innovative outcomes (Marsh, 2018). This research indicates that the mere presence of digital, technological environments does not inherently foster heutagogical learning. Rather, learners must perceive digital tools and digital technologies, reinforced with digital competence, as accessible, meaningful and aligned with their sense of learner agency.

From a phenomenological perspective, this observation is shaped by how individuals live through and make sense of their engagement with technology, not simply as users of tools, but as autonomous learners navigating a personally meaningful learning landscape. The findings of this study suggest that the development of digital competence is not only a technical or cognitive process, but also an existential one. It involves the learner's embodied relationship with their digital world, where confidence, familiarity and relevance play key roles in enabling heutagogical practices. In this sense, digital competence becomes part of a broader lived experience that supports self-directed learning through both practical engagement and interpretive meaning-making.

5.7 Resonance Between Digital Competencies and Learner Autonomy

Digital competencies should be viewed not as fixed or static determinants of learning success, but rather as dynamic and flexible enablers that interact continuously with a learner's personal dispositions. These dispositions include key factors such as intrinsic motivation, the internal drive to learn for personal satisfaction and growth; self-efficacy, the belief in one's own ability to successfully manage and direct learning tasks; and curiosity, the desire to explore, discover

and understand new knowledge. Digital competencies, in this context, act as catalysts that amplify and support these internal traits rather than replace or overshadow them.

This dynamic interplay between digital skills and personal learning attributes fosters a heutagogical orientation. Within heutagogy, learners are not passive recipients of pre-packaged content, instead, they actively engage as co-creators of their learning journeys. They take ownership of their learning objectives, select relevant resources and adapt their learning strategies according to their evolving needs and interests. Digital tools and digital technologies, when effectively integrated, serve to empower learners by providing access to a diverse array of resources and collaborative opportunities that enhance this autonomy.

5.8 Chapter Summary

Grounded in the rich, lived experiences shared by participants in this study, the findings reinforce the idea that digital competencies reach their full potential only when they align meaningfully with a learner's internal sense of purpose, capability and autonomy. It is this resonance, between the learner's personal goals and values and the affordances of digital environments, that transforms technology from a mere utility into a powerful enabler of transformative learning experiences. When learners feel that digital competencies support their unique aspirations and learning styles, they are more likely to engage deeply, persist through challenges and innovate in their learning approaches.

In summary, the role of digital competencies extends beyond technical skill acquisition, it involves nurturing a reciprocal relationship between the learner and technology, where both evolve in tandem. This perspective challenges traditional, linear models of digital competency by emphasising the fluid and contextual nature of digital engagement, highlighting how learners actively construct meaning and exercise agency within digitally mediated learning landscapes.

Chapter 6: Conclusions

6.1 Introduction

This interpretive phenomenological study explored the complex, lived experiences of learners navigating heutagogical learning within varied digital and non-digital contexts. Through thematic analysis, the research illuminated the nuanced interplay between digital competencies, learner autonomy and contextual influences, revealing that while digital competency often supports motivation and agency, it is not universally essential for effective learning in heutagogical contexts. Instead, participants demonstrated diverse pathways to autonomy shaped by individual backgrounds, financial resources and personal learning preferences.

Redecker (2017) framed digital competence as more than just knowing how to use technology, but about being able to thoughtfully apply digital tools to support meaningful learning. The findings arising from this study challenge prevailing assumptions about the dominance of digital competency and emphasises the importance of reflective practice, contextual responsiveness and autonomous learning motivations. As such, this study not only contributes to heutagogical dialogue but also affirms the ethical and pedagogical imperative of recognising learner variability. The conclusions, recommendations and implications that follow aim to inform more flexible, equitable and empowering approaches to heutagogical learning in a digitally diverse world.

6.2 Conclusions

These findings highlight the nuanced and context-sensitive relationship between digital competencies and learning in heutagogical contexts. While the active development of digital competencies often enhances learner autonomy, confidence and sustained motivation, they are not universally required for effective independent, self-directed learning. In non-digital contexts, such as book-based study or hands-on experiential learning, participants reported drawing on other forms of competence, including critical thinking, observational skills and procedural knowledge. This suggests that digital competencies, though

powerful enablers, function as one of several possible pathways through which learners can cultivate agency and independence.

Candy (1991) emphasised that self-directed learning is shaped by a range of personal and contextual factors - a perspective that is strongly reflected in the findings of this study. Learners' engagement with digital tools and technologies was influenced by their prior digital experiences, financial circumstances and individual perceptions of value, all of which played a role in shaping their sense of digital agency and autonomy. These findings underscore the importance of learners developing self-awareness around how, when and why digital competency enable their independent learning and of being mindful of the limitations and possibilities presented by its context.

Raising awareness of the flexible nature of heutagogical learning and the varied roles digital competencies can play within it, may empower individuals to make more informed, intentional choices in how they approach independent, self-directed learning. Schön (1992) placed emphasis on reflective practice as a core component of effective self-directed learning – a view that resonates strongly with the findings of this study. Participants' experiences suggest that encouraging personal reflection on one's digital needs, access and learning environment enables learners to make intentional choices about when and how to engage with technology, while also building confidence in using non-digital approaches where they are more appropriate or effective. In doing so, learners may be better positioned to build personalised, resilient and contextually responsive learning practices.

6.3 Recommendations

In light of the study's findings, several recommendations are proposed to guide learners in navigating heutagogical learning experiences more effectively. These recommendations emphasise the value of personal reflection, contextual responsiveness and the development of digital and non-digital competencies in heutagogical learning environments.

Firstly, learners would benefit from cultivating a heightened sense of self-awareness regarding the learning contexts they engage in. The findings of this study align with Deci and Ryan's (2000) emphasis on autonomy and intrinsic motivation as key drivers of effective learning. This includes learners' capacity to reflect on the environments in which they learn best, consider the influence of their prior experiences and recognise when digital competencies genuinely support their learning goals. Such awareness enables more intentional choices about learning strategies, allowing learners to engage meaningfully with technology when it adds value and to confidently pursue non-digital approaches when more appropriate. Additionally, engaging in regular self-evaluation of digital competencies can support learners in identifying which skills are most relevant to their personal learning journeys. Rather than pursuing digital competencies in a broad or undefined way, learners can assess their specific needs and develop targeted, context-sensitive strategies to build digital agency over time. Importantly, this study also underscores the need for learners to adopt a context-responsive approach to digital tool and digital technology use.

Next, digital competency should not be seen as default requirement for learning within heutagogical contexts, but rather, evaluated critically in relation to the task at hand, the learner's resources and their broader learning aims. This flexible approach supports autonomy and efficiency in digital engagement. Contextual influences on learning (Bronfenbrenner, 1979), conceptualises how individual backgrounds and environmental contexts influence learning. In line with this, this study highlights how financial constraints can limit learners' access to digital technologies, prompting many to rely on open-access platforms, low-cost alternatives and peer support networks to navigate these resource limitations. Building digital resilience through creative problem-solving and resourcefulness can help mitigate the impact of unequal access.

Building on Hooks' (2014) vision of education as a practice of freedom - one that values diverse experiences and challenges dominant norms - this study found that learners benefit from being encouraged to recognise the legitimacy and value of diverse learning pathways. Whether learning is supported by digital

competency or grounded in experiential, hands-on or traditional methods, each approach offers valid and meaningful routes to learner autonomy. Embracing this diversity can help foster more adaptable, confident and contextually grounded learning practices.

6.4 Implications For Future Research

The findings of this phenomenological inquiry open several avenues for further exploration within the broader context of learning and digital competencies. In line with Ilomäki et al. (2016) who conceptualise digital competence as a multifaceted and evolving construct that intersects educational practice, policy and research, this study highlights the need to investigate how diverse learning environments shape learners' engagement with digital tools and skills. As this study focused on the lived experiences of learners navigating learning in a heutagogical context, future research may benefit from broadening the scope across structured, educational fields and learning levels. Investigating whether similar patterns emerge in non-technical or interdisciplinary domains could offer valuable comparative insights into how digital competencies are valued and utilised across diverse learning cultures. Jenkins et al. (2009) highlight the significance of informal, online and community-driven learning environments. Building on this and considering the context-sensitive nature of digital engagement revealed in this study, future phenomenological research could focus on learners in non-institutional or informal settings such as online communities, professional development platforms, or grassroots educational initiatives. Such studies may uncover additional layers of learner autonomy and reveal alternative expressions of digital agency in both formal and informal academic structures.

Another valuable direction for future research involves exploring the longitudinal development of digital competencies in relation to evolving self-directed learning practices - echoing Kirkwood and Price's (2014) reflections on the sustained impact of technology in education. While this study offers a snapshot of learner experiences at a single point in time, a longitudinal phenomenological approach could trace how learners' digital competence, confidence and reflective

awareness evolve over extended learning timeframes. Furthermore, future studies could explore how learners interpret experiences of digital failure, fatigue, or disengagement in relation to their sense of autonomy and self-efficacy. These often less-visible aspects of learning in digital contexts may provide crucial insights into the emotional and psychological dimensions of heutagogical learning, aligning with Bozkurt and Sharma's (2020) research on learner challenges, burnout and the emotional impact of digital learning environments.

In addition, future research would benefit from incorporating more diverse participant profiles to better understand how equity intersects with digital competency development. For instance, Reisdorf and Rhinesmith (2020), highlight how varying levels of digital access continue to shape learners' opportunities and outcomes. Including participants with limited or inconsistent access to digital tools and technologies could uncover how structural inequalities and digital agency influence learning in heutagogical contexts.

Finally, along with equity, inclusion remains a critical area for further exploration. Clouder et al. (2020), emphasise the need to consider neurodiversity and individual learning preferences within inclusive learning environments. By expanding the demographic and contextual range of phenomenological studies, researchers can better account for learner variability and develop more flexible, responsive and supportive learning practices aligned with heutagogical principles.

6.5 Reflection

As a researcher, engaging in this phenomenological inquiry has profoundly shaped the understanding of the nuanced relationship between digital competencies and heutagogical learning. Listening closely to the lived experiences of learners, each navigating their unique learning journey with differing levels of technological integration, revealed heutagogy not merely as an academic framework, but as a dynamic, deeply personal learning orientation.

As the study unfolded, it became increasingly clear that while digital competencies can empower autonomy, motivation and agency, they are not universally essential

for meaningful independent, self-directed learning. Some participants, particularly those in low-tech or non-digital contexts, demonstrated alternative yet equally valid forms of capability - procedural know-how, critical reflection and self-regulation. These findings invite a reconsideration of the prevailing emphasis on digital competence as a default benchmark and instead affirm the legitimacy of diverse, context-responsive learning approaches.

Ultimately, this research has underscored the importance of honouring learner variability and the powerful role of context in shaping both opportunities and barriers to heutagogical learning. As a researcher and a professional in practice, it has been encouraging to adopt a more inclusive and flexible view of what independent, self-directed learning can look like in a digitally diverse world.

6.6 Concluding Remarks

This study emphasises the role of learners as active participants in shaping their own learning journeys. Moving beyond structured or externally guided approaches, this research illustrates how individuals navigate their paths by combining digital tools, digital technologies, digital competencies, personal motivation and reflective thinking. Learning is shown to be non-linear and shaped by a range of personal, digital and social influences, highlighting the dynamic and evolving nature of learning in a heutagogical framework.

The recommendations put forward - encouraging intentional use of technology, regular reflection and varied learning strategies - serve as flexible, practical supports for those seeking greater autonomy. Rather than prescribing a fixed method, these practices empower learners to adapt, experiment and respond to their own needs and goals. Ultimately, this study affirms that heutagogical learning thrives when learners are equipped not only with tools, but with the confidence, curiosity and agency to shape their own heutagogical learning experiences.

References

- Abdulrahaman, M. D., Faruk, N., Oloyede, A. A., Surajudeen-Bakinde, N. T., Olawoyin, L. A., Mejabi, O. V., Imam-Fulani, Y. O., Fahm, A. O., & Azeez, A. L. (2020). Multimedia tools in the teaching and learning processes: A systematic review. *Heliyon*, 6(11), e05312.
<https://doi.org/10.1016/j.heliyon.2020.e05312>
- Ackoski, J., & Karovska Andonovska, B. (2019). *Proceedings of Papers 2-nd International Scientific Conference MILCON'19* (J. Ackoski & B. Karovska Andonovska, Eds.). Military Academy 'General Mihailo Apostolski'.
<https://eprints.ugd.edu.mk/29854/>
- Advance Higher Education. (2024a). *Digital literacies*. Knowledge Hub.
<https://advance-he.ac.uk/knowledge-hub/digital-literacies>
- Advance Higher Education. (2024b). *HEA to Z*. Knowledge Hub.
<https://advance-he.ac.uk/knowledge-hub/heutagogy>
- Aflalo, E., Vaknin, M., Harband, Y., & Safrai, M. Z. (2024). Using digital technologies to support active and self-directed learning. *Journal of Computing in Higher Education*. <https://doi.org/10.1007/s12528-024-09428-y>
- Aksnes, D. W., Langfeldt, L., & Wouters, P. (2019). Citations, Citation Indicators, and Research Quality: An Overview of Basic Concepts and Theories. *SAGE Open*, 9(1). <https://doi.org/DOI: 10.1177/2158244019829575>
- Alam, A., & Mohanty, A. (2023). Educational technology: Exploring the convergence of technology and pedagogy through mobility, interactivity, AI, and learning tools. *Cogent Engineering*, 10(2).
<https://doi.org/10.1080/23311916.2023.2283282>

- Aldahdouh, T. Z., Nokelainen, P., & Korhonen, V. (2020). Technology and Social Media Usage in Higher Education: The Influence of Individual Innovativeness. *SAGE Open*, 10(1).
<https://doi.org/10.1177/2158244019899441>
- Almerich, G., Suárez-Rodríguez, J., Díaz-García, I., & Cebrián-Cifuentes, S. (2020). 21st-century competences: The relation of ICT competences with higher-order thinking capacities and teamwork competences in university students. *Journal of Computer Assisted Learning*, 36(4), 468–479.
<https://doi.org/10.1111/jcal.12413>
- Alsaigh, R., & Coyne, I. (2021). Doing a Hermeneutic Phenomenology Research Underpinned by Gadamer's Philosophy: A Framework to Facilitate Data Analysis. *International Journal of Qualitative Methods*, 20, 16094069211047820. <https://doi.org/10.1177/16094069211047820>
- Altun, M. (2023). The Ongoing Debate over Teacher Centered Education and Student Centered Education. *International Journal of Social Sciences and Educational Studies*, 10(1), 106–110.
<https://doi.org/10.23918/ijsses.v10i1p106>
- Amhag, L., Hellström, L., & Stigmar, M. (2019). Teacher Educators' Use of Digital Tools and Needs for Digital Competence in Higher Education. *Journal of Digital Learning in Teacher Education*, 35(4), 203–220.
<https://doi.org/10.1080/21532974.2019.1646169>
- An Cosán. (2025, May). *Digital Inclusion*. <https://www.ancosan.ie/digital-inclusion/>

- Andersson, C. (2022). Smartphones and online search: Shifting frames in the everyday life of young people. *Information and Learning Sciences*, 123(7/8), 351–370. <https://doi.org/10.1108/ILS-03-2022-0025>
- Anthony Jnr, B., & Noel, S. (2021). Examining the adoption of emergency remote teaching and virtual learning during and after COVID-19 pandemic. *International Journal of Educational Management*, 35(6), 1136–1150. <https://doi.org/10.1108/IJEM-08-2020-0370>
- Argyris, C., & Schön, D. (1978). *Organizational Learning: A Theory of Action Perspective*. Addison-Wesley.
- ARROW. (2025). *Arrow@TU Dublin* [Technological University Dublin]. The Open Access Institutional Repository of TU Dublin. <https://arrow.tudublin.ie/>
- Ballantine, J., Stuber, J., & Everitt, J. (2021). *The Sociology of Education: A Systematic Analysis* (9th ed.). Routledge. <https://doi.org/10.4324/9781003023715>
- Bandura, A. (1986). *Social foundations of thought and action: A social cognitive theory*. Prentice-Hall.
- Bandura, A. (1997). *Self-efficacy: The exercise of control*. Freeman.
- Bandura, A. (2001). Social Cognitive Theory: An Agentic Perspective. *Annual Review of Psychology*, 52, 1–26. <https://doi.org/10.1146/annurev.psych.52.1.1>
- Bandura, A. (2013). The role of self-efficacy in goal-based motivation. In E. Locke & G. Latham (Eds.), *New development in goal setting and task performance*. Routledge.

- Beetham, H., & Sharpe, R. (Eds.). (2019). *Rethinking Pedagogy for a Digital Age: Principles and Practices of Design* (3rd ed.). Routledge.
<https://doi.org/10.4324/9781351252805>
- Bell, J., & Waters, S. (2018). *Doing your research project: A guide for first-time researchers*. (7th ed.). McGraw-Hill Open University Press.
- Benner, P. (1985). Quality of life: A phenomenological perspective on explanation, prediction, and understanding in nursing science. *ANS Advances in Nursing Science*, 8(1), 1–14.
<https://doi.org/10.1097/00012272-198510000-00004>
- Bennett, S., Maton, K., & Kervin, L. (2008). The ‘digital natives’ debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775–786. <https://doi.org/10.1111/j.1467-8535.2007.00793.x>
- Bergdahl, N., Fors, U., Hernwall, P., & Knutsson, O. (2018). The Use of Learning Technologies and Student Engagement in Learning Activities. *Nordic Journal of Digital Literacy*, 13(2), 113–130.
<https://doi.org/10.18261/issn.1891-943x-2018-02-04>
- Bernstein, S. L., & Feldman, J. (2015). Incentives to participate in clinical trials: Practical and ethical considerations. *The American Journal of Emergency Medicine*, 33(9), 1197–1200. <https://doi.org/10.1016/j.ajem.2015.05.020>
- Blaschke, L. M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *The International Review of Research in Open and Distributed Learning*, 13(1), 56–71.
<https://doi.org/10.19173/irrodl.v13i1.1076>

- Blaschke, L. M. (2021). The dynamic mix of heutagogy and technology: Preparing learners for lifelong learning. *British Journal of Educational Technology*, 52(4), 1629–1645. <https://doi.org/10.1111/bjet.13105>
- Blaschke, L. M., & Hase, S. (2015). Heutagogy: A Holistic Framework for Creating Twenty-First-Century Self-determined Learners. In B. Gros & M. Kinshuk (Eds.), *The future of ubiquitous learning: Learning designs for emerging pedagogies* (pp. 25–40). Springer Verlag. https://doi.org/10.1007/978-3-662-47724-3_2
- Blaschke, L. M., & Hase, S. (2019). Heutagogy and digital media networks: *Pacific Journal of Technology Enhanced Learning*, 1(1), Article 1. <https://doi.org/10.24135/pjtel.v1i1.1>
- Blaschke, L. M., Hase, S., & Kenyon, C. (2014). *Experiences in self-determined learning*. Center for Open Education Research (COER), University of Oldenburg. <https://www.researchgate.net/publication/268684257>
- Bloom, B. S. (1956). *Taxonomy of Educational Objectives: The Classification of Educational Goals*. Longmans, Green.
- Bonisteel, I., Shulman, R., Newhook, L. A., Guttman, A., Smith, S., & Chafe, R. (2021). Reconceptualizing Recruitment in Qualitative Research. *International Journal of Qualitative Methods*, 20, 16094069211042493. <https://doi.org/10.1177/16094069211042493>
- Bozkurt, A., & Sharma, R. C. (2020). Emergency remote teaching in a time of global crisis due to CoronaVirus pandemic. *Asian Journal of Distance Education*, 15(1), i–vi. <https://doi.org/10.5281/zenodo.3778083>

- Braun, V., & Clarke, V. (2006). Using thematic analysis in psychology. *Qualitative Research in Psychology*, 3(2), 77–101.
<https://doi.org/10.1191/1478088706qp063oa>
- Braun, V., & Clarke, V. (2012). Thematic analysis. In H. Cooper, P. Camic, D. Long, A. Panter, D. Rindskopf, & K. Sher (Eds.), *APA handbook of research methods in psychology, Vol 2: Research designs: Quantitative, qualitative, neuropsychological, and biological* (Vol. 2, pp. 57–71). American Psychological Association. <https://doi.org/10.1037/13620-004>
- Braun, V., & Clarke, V. (2013). *Successful Qualitative Research: A Practical Guide for Beginners* (1st ed.). SAGE Publications Ltd.
- Braun, V., & Clarke, V. (2014). What can “thematic analysis” offer health and wellbeing researchers? *International Journal of Qualitative Studies on Health and Well-Being*, 9(1), 26152.
<https://doi.org/10.3402/qhw.v9.26152>
- Braun, V., & Clarke, V. (2020). One size fits all? What counts as quality practice in (reflexive) thematic analysis? *Qualitative Research in Psychology*, 18(3), 328–352. <https://doi.org/10.1080/14780887.2020.1769238>
- Braun, V., & Clarke, V. (2021). Can I use TA? Should I use TA? Should I not use TA? Comparing reflexive thematic analysis and other pattern-based qualitative analytic approaches. *Counselling and Psychotherapy Research*, 21(1), 37–47. <https://doi.org/10.1002/capr.12360>
- Braun, V., & Clarke, V. (2023). Toward good practice in thematic analysis: Avoiding common problems and be(com)ing a knowing researcher. *International Journal of Transgender Health*, 24(1), 1–6.
<https://doi.org/10.1080/26895269.2022.2129597>

- Bree, R. T., & Gallagher, G. (2016). Using Microsoft Excel to code and thematically analyse qualitative data: A simple, cost-effective approach. *All Ireland Journal of Higher Education*, 8(2).
<https://doi.org/10.62707/aishej.v8i2.281>
- Brockett, R. G., & Hiemstra, R. (2018). *Self-direction in Adult Learning: Perspectives on Theory, Research and Practice*. Routledge.
<https://doi.org/10.4324/9780429457319>
- Bronfenbrenner, U. (1979). *The ecology of human development: Experiments by nature and design*. Harvard University Press.
- Brown, A. H., & Green, T. D. (2016). *The Essentials of Instructional Design: Connecting Fundamental Principles with Process and Practice* (3rd ed.). Routledge. <https://doi.org/10.4324/9781003404835>
- Bruner, J. (1960). *The Process of Education*. Harvard University Press.
- Bruner, J. (1974). *Toward a Theory of Instruction*. Harvard University Press.
- Burnett, C. (2014). Investigating pupils' interactions around digital texts: A spatial perspective on the "classroom-ness" of digital literacy practices in schools. *Educational Review*, 66(2), 192–209.
<https://doi.org/10.1080/00131911.2013.768959>
- Burns, M., Bally, J., Burles, M., Holtslander, L., & Peacock, S. (2022). Constructivist Grounded Theory or Interpretive Phenomenology? Methodological Choices Within Specific Study Contexts. *International Journal of Qualitative Methods*, 21, 16094069221077758.
<https://doi.org/10.1177/16094069221077758>

- Busetto, L., Wick, W., & Gumbinger, C. (2020). How to use and assess qualitative research methods. *Neurological Research and Practice*, 2(1), 14. <https://doi.org/10.1186/s42466-020-00059-z>
- Bygstad, B., Øvrelid, E., Ludvigsen, S., & Dæhlen, M. (2022). From dual digitalization to digital learning space: Exploring the digital transformation of higher education. *Computers & Education*, 182, 104463. <https://doi.org/10.1016/j.compedu.2022.104463>
- Byrne, D. (2022). A worked example of Braun and Clarke's approach to reflexive thematic analysis. *Quality & Quantity*, 56(3), 1391–1412. <https://doi.org/10.1007/s11135-021-01182-y>
- Candy, P. C. (1991). *Self-Direction for Lifelong Learning. A Comprehensive Guide to Theory and Practice*. Jossey Bass.
- Canning, N. (2010). Playing with heutagogy: Exploring strategies to empower mature learners in higher education. *Journal of Further and Higher Education*, 34(1), 59–71. <https://doi.org/10.1080/03098770903477102>
- Carpenter, J. P., & Green, T. D. (2017). Mobile instant messaging for professional learning: Educators' perspectives on and uses of Voxer. *Teaching and Teacher Education*, 68, 53–67. <https://doi.org/10.1016/j.tate.2017.08.008>
- Charmaz, K. (2024). *Constructing Grounded Theory—Introducing Qualitative Methods* (3rd ed.). SAGE Publications Ltd.
- Chiu, T. K. F. (2022). Applying the self-determination theory (SDT) to explain student engagement in online learning during the COVID-19 pandemic. *Journal of Research on Technology in Education*, 54(sup1), S14–S30. <https://doi.org/10.1080/15391523.2021.1891998>

- Clarke, V., & Braun, V. (2017). Thematic analysis. *The Journal of Positive Psychology*, 12(3), 297–298.
<https://doi.org/10.1080/17439760.2016.1262613>
- Clarke, V., & Braun, V. (2018). Using thematic analysis in counselling and psychotherapy research: A critical reflection. *Counselling and Psychotherapy Research*, 18(2), 107–110.
<https://doi.org/10.1002/capr.12165>
- Cleland, J. A. (2017). The qualitative orientation in medical education research. *Korean Journal of Medical Education*, 29(2), 61–71.
<https://doi.org/10.3946/kjme.2017.53>
- Clouder, L., Karakus, M., Cinotti, A., Ferreyra, M. V., Fierros, G. A., & Rojo, P. (2020). Neurodiversity in higher education: A narrative synthesis. *Higher Education*, 80(4), 757–778. <https://doi.org/10.1007/s10734-020-00513-6>
- Cohen, L., Manion, L., & Morrison, K. (2018). *Research Methods in Education* (8th ed.). Routledge.
- Coker, H. (2020). Why Does Digital Learning Matter? Digital Competencies, Social Justice and Critical Pedagogy in Initial Teacher Education. *Journal of Teaching and Learning*, 14(1), Article 1.
<https://doi.org/10.22329/jtl.v14i1.6259>
- Connelly, L. M. (2010). What is phenomenology? *Medsurg Nursing: Official Journal of the Academy of Medical-Surgical Nurses*, 19(2), 127–128.
- Connolly, N., & McGuinness, C. (2018). Towards Digital Literacy for the Active Participation and Engagement of Young People in a Digital World. In *Perspectives on Youth: Young People in a Digitalised World* (In Council

- of Europe (Ed.), pp. 77–92). Council of Europe and European Commission.
- Cook, V. S., & Gregory, R. L. (2018). Emerging Technologies: It's Not What YOU Say – It's What THEY Do. *Online Learning*, 22(3), Article 3.
<https://doi.org/10.24059/olj.v22i3.1463>
- Cranmer, S. (2020). Disabled children's evolving digital use practices to support formal learning. A missed opportunity for inclusion. *British Journal of Educational Technology*, 51(2), 315–330.
<https://doi.org/10.1111/bjet.12827>
- Creswell, J. W. (1998). *Qualitative Inquiry and Research Design: Choosing Among Five Traditions*. SAGE Publications Inc.
- Creswell, J. W. (2013). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (4th ed.). SAGE Publications Inc.
- Creswell, J. W., & Creswell, J. D. (2018). *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches* (5th ed.). SAGE Publications Inc.
- Creswell, J. W., & Plano Clark, V. L. (2007). *Designing and Conducting Mixed Methods Research* (1st ed.). SAGE Publications Inc.
- Crompton, H., Bernacki, M., & Greene, J. A. (2020). Psychological foundations of emerging technologies for teaching and learning in higher education. *Current Opinion in Psychology*, 36, 101–105.
<https://doi.org/10.1016/j.copsyc.2020.04.011>
- Crotty, M. (1998). *The Foundations of Social Research: Meaning and Perspective in the Research Process* (1st ed.). Routledge.

- Curran, V., Gustafson, D. L., Simmons, K., Lannon, H., Wang, C., Garmsiri, M., Fleet, L., & Wetsch, L. (2019). Adult learners' perceptions of self-directed learning and digital technology usage in continuing professional education: An update for the digital age. *Journal of Adult and Continuing Education*, 25(1), 74–93. <https://doi.org/10.1177/1477971419827318>
- Deci, E. L., & Ryan, R. M. (2000). The 'What' and 'Why' of Goal Pursuits: Human Needs and the Self-Determination of Behavior. *Psychological Inquiry*, 11(4), 227–268. https://doi.org/10.1207/S15327965PLI1104_01
- Denham, M. A., & Onwuegbuzie, A. J. (2013). Beyond Words: Using Nonverbal Communication Data in Research to Enhance Thick Description and Interpretation. *International Journal of Qualitative Methods*, 12(1), 670–696. <https://doi.org/10.1177/160940691301200137>
- Denscombe, M. (2014). *The Good Research Guide: For Small-scale Social Research Projects* (5th ed.). McGraw-Hill Education (UK).
- Department of Enterprise, Trade and Employment. (2023). *Digital Decade Policy Programme: Ireland's National Strategic Roadmap* [Digital Decade Policy Programme Ireland's National Strategic Roadmap]. Government of Ireland. <https://www.gov.ie/en/department-of-enterprise-trade-and-employment/publications/irelands-national-strategic-roadmap-for-the-eu-digital-decade-policy-programme/>
- DiCicco-Bloom, B., & Crabtree, B. F. (2006). The qualitative research interview. *Medical Education*, 40(4), 314–321. <https://doi.org/10.1111/j.1365-2929.2006.02418.x>

- D'Souza, R. (2024). Understanding Heutagogy: A New “Gogy”. *Journal of Research Initiatives*, 8(4).
<https://digitalcommons.uncfsu.edu/jri/vol8/iss4/3>
- Dunlosky, J., Rawson, K. A., Marsh, E. J., Nathan, M. J., & Willingham, D. T. (2013). Improving Students' Learning With Effective Learning Techniques: Promising Directions From Cognitive and Educational Psychology. *Psychological Science in the Public Interest: A Journal of the American Psychological Society*, 14(1), 4–58.
<https://doi.org/10.1177/1529100612453266>
- Eddles-Hirsch, K. (2015). Phenomenology and educational research. *International Journal of Advanced Research*, 3(8), 251–260.
<http://www.journalijar.com/article/5631/phenomenology-and-educational-research/>
- Edelheim, J. R. (2014). Ontological, epistemological and axiological issues. In *The Routledge Handbook of Tourism and Hospitality Education*. Routledge.
- Educational Review Journal. (2025). *Educational Review Journal*. Taylor & Francis. <https://www.tandfonline.com/journals/cedr20>
- Emerald Insight. (2025). *Emerald Insight* [Emerald Publishing Limited]. Emerald Insight Discover Journals, Books & Case Studies.
<https://www.emerald.com/insight/>
- ERIC - Education Resources Information Center. (2025). *ERIC - Education Resources Information Center* [Institute of Education Sciences within the U.S. Department of Education]. ERIC - Education Resources Information Center. <https://eric.ed.gov/>

- Erlandson, D., Harris, E., Skipper, B., & Allen, S. (1993). *Doing Naturalistic Inquiry: A Guide to Methods* (1st ed.). SAGE Publications Inc.
- European Commission. (2019). *Key competences for lifelong learning*. Publications Office of the European Union.
<https://data.europa.eu/doi/10.2766/569540>
- European Commission. (2023). *The European Code of Conduct for Research Integrity – Revised Edition 2023*. ALLEA All European Academies.
<https://doi.org/DOI 10.26356/ECOC>
- European Commission. (2024). *DigComp Framework*. DigComp Framework.
https://joint-research-centre.ec.europa.eu/oldpage-digcomp/digcomp-framework_en
- European Commission: Directorate-General for Communications Networks, Content and Technology. (2024). *2030 Digital Decade: Report on the state of the Digital Decade 2024*. Publications Office of the European Union. <https://data.europa.eu/doi/10.2759/922>
- Evans, K., & Finlay, L. (2009). To be, or not to be... registered: A relational-phenomenological exploration of what State Registration means to psychotherapists. *European Journal for Qualitative Research in Psychotherapy*, 4, 4–12. <https://ejqrp.org/index.php/ejqrp/article/view/21>
- Falloon, G. (2020). From digital literacy to digital competence: The teacher digital competency (TDC) framework. *Educational Technology Research and Development*, 68(5), 2449–2472. <https://doi.org/10.1007/s11423-020-09767-4>

- Farrell, O. (2020). From Portafoglio to Eportfolio: The Evolution of Portfolio in Higher Education. *Journal of Interactive Media in Education*, 1(1), 1–14.
<https://doi.org/10.5334/jime.574>
- Finlay, M. J., Tinnion, D. J., & Simpson, T. (2022). A virtual versus blended learning approach to higher education during the COVID-19 pandemic: The experiences of a sport and exercise science student cohort. *Journal of Hospitality, Leisure, Sport & Tourism Education*, 30, 100363.
<https://doi.org/10.1016/j.jhlste.2021.100363>
- Gadamer, H.-G. (1960). *Truth and method*. Continuum.
- Gadamer, H.-G. (Ed.). (1976). *Philosophical Hermeneutics*. University of California Press.
- Gagné, R. M., Briggs, L. J., & Wager, W. W. (1992). *Principles of Instructional Design*. Harcourt Brace Jovanovich College Publishers.
- Garrett, T. (2008). Student-Centered and Teacher-Centered Classroom Management: A Case Study of Three Elementary Teachers. *Journal of Classroom Interaction*, 43(1), 34–47. <https://eric.ed.gov/?id=EJ829018>
- Garrison, D. R. (1992). Critical Thinking and Self-Directed Learning in Adult Education: An Analysis of Responsibility and Control Issues. *Adult Education Quarterly*, 42(3), 136–148.
<https://doi.org/10.1177/074171369204200302>
- Gerstein, J. (2014). Moving from Education 1.0 Through Education 2.0 Towards Education 3.0. In L. M. Blaschke, C. Kenyon, & S. Hase (Eds.), *Experiences in Self-Determined Learning* (pp. 84–96). Createspace Independent Publishing.
https://scholarworks.boisestate.edu/edtech_facpubs/104

- Gibbs, G. R. (2018). *Analyzing Qualitative Data* (2nd ed.). SAGE Publications, Ltd. <https://methods.sagepub.com/book/mono/analyzing-qualitative-data/toc>
- Gillaspy, E., & Vasilica, C. (2021). Developing the digital self-determined learner through heutagogical design. *Higher Education Pedagogies*, 6(1), 135–155. <https://doi.org/10.1080/23752696.2021.1916981>
- Glassner, A., & Back, S. (2020). Discussion of the Case Studies. In A. Glassner & S. Back (Eds.), *Exploring Heutagogy in Higher Education: Academia Meets the Zeitgeist* (pp. 169–182). Springer. https://doi.org/10.1007/978-981-15-4144-5_14
- Gleeson, C. (2023, June 27). Online learning: Diverse course selection offers multiple opportunities. *The Irish Times*. <https://www.irishtimes.com/ireland/education/2023/06/27/online-learning-diverse-course-selection-offers-multiple-opportunities/>
- González-Pérez, L. I., & Ramírez-Montoya, M. S. (2022). Components of Education 4.0 in 21st Century Skills Frameworks: Systematic Review. *Sustainability*, 14(3), Article 3. <https://doi.org/10.3390/su14031493>
- Goodman, L. A. (2011). Comment: On Respondent-Driven Sampling and Snowball Sampling in Hard-to-Reach Populations and Snowball Sampling Not in Hard-to-Reach Populations. *Sociological Methodology*, 41(1), 347–353. <https://doi.org/10.1111/j.1467-9531.2011.01242.x>
- Government of Ireland. (2024). *Ireland's Literacy, Numeracy and Digital Literacy Strategy 2024-2033 Every Learner from Birth to Young Adulthood*. <https://eurydice.eacea.ec.europa.eu/news/ireland-launching-literacy-numeracy-and-digital-literacy-strategy-2024-2033>

- Grant, C., & Osanloo, A. (2014). Understanding, Selecting, and Integrating a Theoretical Framework in Dissertation Research: Creating the Blueprint for Your “House”. *Administrative Issues Journal Education Practice and Research*, 4(2). <https://doi.org/10.5929/2014.4.2.9>
- Gray, D. E. (2022). *Doing Research in the Real World* (5th ed.). SAGE Publications Ltd.
- Grix, J. (2002). Introducing Students to the Generic Terminology of Social Research. *Politics*, 22(3), 175–186. <https://doi.org/10.1111/1467-9256.00173>
- Guilfoyle, R. (2024). *LibGuides: Literature Review: Developing a Search Strategy*. Technological University Dublin Library Services. <https://tudublin.libguides.com/c.php?g=679035&p=4839595>
- Guillemin, M., & Gillam, L. (2004). Ethics, Reflexivity, and “Ethically Important Moments” in Research. *Qualitative Inquiry*, 10(2), 261–280. <https://doi.org/10.1177/1077800403262360>
- Guillemin, M., & Heggen, K. (2009). Rapport and respect: Negotiating ethical relations between researcher and participant. *Medicine, Health Care and Philosophy*, 12(3), 291–299. <https://doi.org/10.1007/s11019-008-9165-8>
- Halder, S., & Saha, S. (2023). *The Routledge Handbook of Education Technology* (1st ed.). Routledge.
- Haleem, A., Javaid, M., Qadri, M. A., & Suman, R. (2022). Understanding the role of digital technologies in education: A review. *Sustainable Operations and Computers*, 3, 275–285. <https://doi.org/10.1016/j.susoc.2022.05.004>

- Hase, S. (2009). Heutagogy and e-learning in the workplace: Some challenges and opportunities. *Impact: Journal of Applied Research in Workplace E-Learning*, 1(1), 43–52. <https://doi.org/10.5043/impact.13>
- Hase, S., & Kenyon, C. (2000). From andragogy to heutagogy. *Ultibase Articles*, 5(3), 1–10.
https://www.researchgate.net/publication/301339522_From_andragogy_to_heutagogy
- Hase, S., & Kenyon, C. (2007). Heutagogy: A Child of Complexity Theory. *Complicity: An International Journal of Complexity and Education*, 4(1), Article 1. <https://doi.org/10.29173/cmplct8766>
- Hase, S., & Kenyon, C. (2013). *Self-Determined Learning: Heutagogy in Action*. Bloomsbury Academic.
- Hayes, R., Carr, C., & Wohn, D. Y. (2016). One Click, Many Meanings: Interpreting Paralinguistic Digital Affordances in Social Media. *Journal of Broadcasting & Electronic Media*, 60(1), 171–187.
<https://doi.org/10.1080/08838151.2015.1127248>
- Heidegger, M. (1962). *Being and Time*. Basil Blackwell.
- Hiemstra, R., & Brockett, R. (2012). Reframing the Meaning of Self-Directed Learning: An Updated Model. *Adult Education Research Conference*.
<https://newprairiepress.org/aerc/2012/papers/22>
- Higher Education Authority. (2022). *HEA Principles of Good Practice in Research within Irish Higher Education Institutions*. Higher Education Authority. <https://hea.ie/policy/research-policy/hea-principles-of-good-practice-in-research-within-irish-higher-education-institutions/>

- Ho, K. H. M., Chiang, V. C. L., & Leung, D. (2017). Hermeneutic phenomenological analysis: The 'possibility' beyond 'actuality' in thematic analysis. *Journal of Advanced Nursing*, 73(7), 1757–1766.
<https://doi.org/10.1111/jan.13255>
- Hooks, B. (2014). *Teaching To Transgress*. Routledge.
- Hsi, S. (2007). Conceptualizing Learning from the Everyday Activities of Digital Kids. *International Journal of Science Education*, 29(12), 1509–1529.
<https://doi.org/10.1080/09500690701494076>
- Hsieh, H.-F., & Shannon, S. E. (2005). Three Approaches to Qualitative Content Analysis. *Qualitative Health Research*, 15(9), 1277–1288.
<https://doi.org/10.1177/1049732305276687>
- Husserl, E. (1931). *Ideas: General Introduction to Pure Phenomenology*. George Allen & Unwin (reprinted 2012, London: Routledge).
- Ilomäki, L., Paavola, S., Lakkala, M., & Kantosalo, A. (2016). Digital competence – an emergent boundary concept for policy and educational research. *Education and Information Technologies*, 21(3), 655–679.
<https://doi.org/10.1007/s10639-014-9346-4>
- Irish Universities Association. (2024). *Policy Statement on Ensuring Research Integrity in Ireland*. Irish Universities Association. www.iua.ie/research-innovation/research-integrity/
- Islam, Md. K., Sarker, Md. F. H., & Islam, M. S. (2022). Promoting student-centred blended learning in higher education: A model. *E-Learning and Digital Media*, 19(1), 36–54. <https://doi.org/10.1177/20427530211027721>
- Jenkins, H., Purushotma, R., Weigel, M., Clinton, K., & Robison, A. J. (2009). *Confronting the Challenges of Participatory Culture: Media Education for*

the 21st Century. The MIT Press.

<https://doi.org/10.7551/mitpress/8435.001.0001>

JISC. (2024). *Individual digital capabilities*. JISC Building Digital Capability.

<https://digitalcapability.jisc.ac.uk/what-is-digital-capability/individual-digital-capabilities/>

Jonassen, D. H. (1991). Objectivism versus constructivism: Do we need a new philosophical paradigm? *Educational Technology Research and Development*, 39(3), 5–14. <https://doi.org/10.1007/BF02296434>

Jones, R. H., & Hafner, C. A. (2012). *Understanding Digital Literacies: A Practical Introduction*. Routledge. <https://doi.org/10.4324/9780203095317>

Kallio, H., Pietilä, A.-M., Johnson, M., & Kangasniemi, M. (2016). Systematic methodological review: Developing a framework for a qualitative semi-structured interview guide. *Journal of Advanced Nursing*, 72(12), 2954–2965. <https://doi.org/10.1111/jan.13031>

Kenyon, C., & Hase, S. (2001). *Moving from Andragogy to Heutagogy in Vocational Education*. For full text: <http://www.https://eric.ed.gov/?id=ED456279>

Kenyon, C., & Hase, S. (2010). *Kenyon, C. & Hase, S. (2010). Andragogy and heutagogy in postgraduate work. In T. Kerry (Ed.), Meeting the challenges of change in postgraduate higher education, London: Continuum Press.*

Khatamian Far, P. (2018). Challenges of Recruitment and Retention of University Students as Research Participants: Lessons Learned from a Pilot Study. *Journal of the Australian Library and Information Association*, 67(3), 278–292. <https://doi.org/10.1080/24750158.2018.1500436>

- Kirkwood, A., & Price, L. (2014). Technology-enhanced learning and teaching in higher education: What is 'enhanced' and how do we know? A critical literature review. *Learning, Media and Technology*, 39(1), 6–36.
<https://doi.org/10.1080/17439884.2013.770404>
- Knowles, M. S. (1975). *Self-directed Learning: A Guide for Learners and Teachers*. Cambridge Adult Education.
- Knowles, M. S. (1980). *The Modern Practice of Adult Education: From Pedagogy to Andragogy*. Association Press.
- Korstjens, I., & Moser, A. (2017). Series: Practical guidance to qualitative research. Part 2: Context, research questions and designs. *European Journal of General Practice*, 23(1), 274–279.
<https://doi.org/10.1080/13814788.2017.1375090>
- Kristensen, G. K., & Ravn, M. N. (2015). The voices heard and the voices silenced: Recruitment processes in qualitative interview studies. *Qualitative Research*, 15(5), 722–737.
<https://doi.org/10.1177/1468794114567496>
- Kuhn, T. S. (2012). *The Structure of Scientific Revolutions: 50th Anniversary Edition* (I. Hacking, Ed.). University of Chicago Press.
- Kvale, S. (1996). *Interviews: An introduction to qualitative research interviewing*. Sage Publications, Inc.
- Lavee, E., & Itzchakov, G. (2023). Good listening: A key element in establishing quality in qualitative research. *Qualitative Research*, 23(3), 614–631.
<https://doi.org/10.1177/14687941211039402>
- Laverty, S. M. (2003). Hermeneutic Phenomenology and Phenomenology: A Comparison of Historical and Methodological Considerations.

International Journal of Qualitative Methods, 2(3), 21–35.

<https://doi.org/10.1177/160940690300200303>

Law, N., Woo, D., de la Torre, J., & Wong, G. (2018). *A Global Framework of Reference on Digital Literacy Skills for Indicator 4.4.2*

(UIS/2018/ICT/IP/51). UNESCO Institute for Statistics.

<https://uis.unesco.org/sites/default/files/documents/ip51-global-framework-reference-digital-literacy-skills-2018-en.pdf>

LeCompte, M. D., & Goetz, J. P. (1982). Problems of Reliability and Validity in Ethnographic Research. *Review of Educational Research*, 52(1), 31–60.

<https://doi.org/10.3102/00346543052001031>

Leung, L. (2015). Validity, reliability and generalizability in qualitative research.

Journal of Family Medicine and Primary Care, 4(3), 324–327.

Lincoln, Y. S., & Guba, E. G. (1985). *Naturalistic Inquiry*. SAGE Publications Inc.

Lock, J., Lakhal, S., Cleveland-Innes, M., Arancibia, P., Dell, D., & Silva, N.

(2021). Creating technology-enabled lifelong learning: A heutagogical approach. *British Journal of Educational Technology*, 52.

<https://doi.org/10.1111/bjet.13122>

Lockee, B. B. (2021). Online education in the post-COVID era. *Nature*

Electronics, 4(1), 5–6. <https://doi.org/10.1038/s41928-020-00534-0>

Loeng, S. (2020). Self-Directed Learning: A Core Concept in Adult Education.

Education Research International, 2020(1), 3816132.

<https://doi.org/10.1155/2020/3816132>

Luckin, R., Clark, W., Garnett, F., Whitworth, A., Akass, J., Cook, J., Day, P.,

Ecclesfield, N., Hamilton, T., & Robertson, J. (2010). Learner-Generated Contexts: A Framework to Support the Effective Use of Technology for

- Learning. In M. Lee & C. McLoughlin (Eds.), *Web 2.0-Based E-Learning: Applying Social Informatics for Tertiary Teaching* (pp. 70–84). IGI Global Scientific Publishing. <https://doi.org/10.4018/978-1-60566-294-7.ch004>
- Lune, H., & Berg, B. (2016). *Qualitative Research Methods for the Social Sciences* (9th ed.). Pearson.
- Lynch, M., Sage, T., Hitchcock, L. I., & Sage, M. (2021). A heutagogical approach for the assessment of Internet Communication Technology (ICT) assignments in higher education. *International Journal of Educational Technology in Higher Education*, 18(1), 55. <https://doi.org/10.1186/s41239-021-00290-x>
- Maguire, M., & Delahunt, B. (2017). Doing a thematic analysis: A practical, step-by-step guide for learning and teaching scholars. *All Ireland Journal of Higher Education*, 9(3), Article 3. <https://doi.org/10.62707/aishej.v9i3.335>
- Mannan, E. F., Nurpratama, M. R., Shuhidan, S. M., & Masrek, M. N. (2023). The relationship between digital literacy and heutagogy learning: A pilot study among college students in Indonesia. *Library Management*, 44(3/4), 246–260. <https://doi.org/10.1108/LM-06-2022-0062>
- Margaryan, A., Littlejohn, A., & Vojt, G. (2011). Are digital natives a myth or reality? University students' use of digital technologies. *Computers & Education*, 56(2), 429–440. <https://doi.org/10.1016/j.compedu.2010.09.004>
- Marsh, E. (2018). Understanding the Effect of Digital Literacy on Employees' Digital Workplace Continuance Intentions and Individual Performance. *International Journal of Digital Literacy and Digital Competence (IJDLC)*, 9(2), 15–33. <https://doi.org/10.4018/IJDLC.2018040102>

- Martzoukou, K. (2022, October 19). Digital Competences in Higher Education: An agenda for students' equal participation. *Keynote*. 28th Panhellenic academic libraries conference: green and sustainable academic libraries in the post-COVID era, Corfu, Greece. <https://rgu-repository.worktribe.com/output/1912526>
- Maslow, A. H. (1943). A theory of human motivation. *Psychological Review*, 50(4), 370–396. <https://doi.org/10.1037/h0054346>
- Matias, A., & Wolf, D. F. (2013). Engaging Students in Online Courses Through the Use of Mobile Technology. In *Increasing Student Engagement and Retention Using Mobile Applications: Smartphones, Skype and Texting Technologies: Vol. 6 Part D* (world; pp. 115–142). Emerald Group Publishing Limited. [https://doi.org/10.1108/S2044-9968\(2013\)000006D007](https://doi.org/10.1108/S2044-9968(2013)000006D007)
- McDermid, F., Peters, K., Jackson, D., & Daly, J. (2013). Conducting qualitative research in the context of pre-existing peer and collegial relationships. *Nurse Researcher*, 21(5), 29–33. <https://doi.org/10.7748/nr.21.5.28.e1232>
- McFadyen, J., & Rankin, J. (2016). The Role of Gatekeepers in Research: Learning from Reflexivity and Reflection. *Global Science and Technology Forum (GSTF) Journal of Nursing and Health Care (JNHC)*, 4(1), 82–88. <http://dl6.globalstf.org/index.php/jnhc/article/view/1745>
- McGrath, C., Palmgren, P. J., & Liljedahl, M. (2019). Twelve tips for conducting qualitative research interviews. *Medical Teacher*, 41(9), 1002–1006. <https://doi.org/10.1080/0142159X.2018.1497149>

- Merriam, S. B., & Tisdell, E. J. (2015). *Qualitative Research: A Guide to Design and Implementation* (4th ed.). Jossey-Bass.
- Microsoft Corporation. (2025a). *Microsoft Excel* (Version 19.2505.37051.0) [Computer software]. Microsoft Corporation.
<https://www.microsoft.com/en-ie/microsoft-365/excel>
- Microsoft Corporation. (2025b). *Microsoft Word* (Version 19.2505.37051.0) [Computer software]. Microsoft Corporation.
<https://www.microsoft.com/en-ie/microsoft-365/word>
- Microsoft Teams* (Version 25072.1611.3570.1995). (2025). [Computer software]. Microsoft Corporation. <https://www.microsoft.com/en-us/microsoft-teams/group-chat-software>
- Mladenovici, V., Ilie, M. D., Maricuțoiu, L. P., & Iancu, D. E. (2022). Approaches to teaching in higher education: The perspective of network analysis using the revised approaches to teaching inventory. *Higher Education*, 84(2), 255–277. <https://doi.org/10.1007/s10734-021-00766-9>
- Moore, M. G. (1973). Toward a Theory of Independent Learning and Teaching. *The Journal of Higher Education*, 44(9), 661–679.
<https://doi.org/10.2307/1980599>
- Moore, R. L. (2020). Developing lifelong learning with heutagogy: Contexts, critiques, and challenges. *Distance Education*, 41(3), 381–401.
<https://doi.org/10.1080/01587919.2020.1766949>
- Moore, R., Vitale, D., & Stawinoga, N. (2018). *The Digital Divide and Educational Equity A Look at Students with Very Limited Access to Electronic Devices at Home*. ACT Research & Center for Equity in Learning. <https://files.eric.ed.gov/fulltext/ED593163.pdf>

- Morris, T. H. (2019). Adaptivity Through Self-Directed Learning to Meet the Challenges of Our Ever-Changing World. *Adult Learning*, 30(2), 56–66.
<https://doi.org/10.1177/1045159518814486>
- Morris, T. H., & Rohs, M. (2021). Digitization bolstering self-directed learning for information literate adults—A systematic review. *Computers and Education Open*, 2, 100048. <https://doi.org/10.1016/j.caeo.2021.100048>
- Morse, J. M. (1999). Myth #93: Reliability and Validity Are Not Relevant to Qualitative Inquiry. *Qualitative Health Research*, 9(6), 717–718.
<https://doi.org/10.1177/104973299129122171>
- Moser, A., & Korstjens, I. (2017). Series: Practical guidance to qualitative research. Part 3: Sampling, data collection and analysis. *European Journal of General Practice*, 24(1), 9–18.
<https://doi.org/10.1080/13814788.2017.1375091>
- Moustakas, C. (1994). *Phenomenological Research Methods*. SAGE Publications Inc.
- Munna, A. S., & Kalam, A. (2021). Teaching and learning process to enhance teaching effectiveness: A literature review. *International Journal of Humanities and Innovation (IJHI)*, 4(1), 1–4.
<https://files.eric.ed.gov/fulltext/ED610428.pdf>
- National Forum for the Enhancement of Teaching and Learning in Higher Education. (2020). *Irish National Digital Experience (INDEX) Survey: Findings from students and staff who teach in higher education* (p. 123).
<https://hub.teachingandlearning.ie/resource/irish-national-digital-experience-index-survey-findings-from-students-and-staff-who-teach-in-higher-education/>

- Neubauer, B., Witkop, C., & Varpio, L. (2019). How phenomenology can help us learn from the experiences of others. *Perspectives on Medical Education*, 8(2), 90–97. <https://doi.org/10.1007/S40037-019-0509-2>
- Ng, W. (2012). Can we teach digital natives digital literacy? *Computers & Education*, 59(3), 1065–1078. <https://doi.org/10.1016/j.compedu.2012.04.016>
- Noble, H., & Smith, J. (2015). Issues of validity and reliability in qualitative research. *Evidence Based Nursing*, 18(2), 34–35. <https://doi.org/10.1136/eb-2015-102054>
- Nortvig, A.-M., Petersen, A. K., & Balle, S. H. (2018). A Literature Review of the Factors Influencing E-Learning and Blended Learning in Relation to Learning Outcome, Student Satisfaction and Engagement. *Electronic Journal of E-Learning*, 16(1), 46–55. <https://eric.ed.gov/?id=EJ1175336>
- Noskova, T., Pavlova, T., & Yakovleva, O. (2021). A Study of Students' Preferences in The Information Resources of The Digital Learning Environment. *Journal on Efficiency and Responsibility in Education and Science*, 14(1), Article 1. <https://doi.org/10.7160/eriesj.2021.140105>
- Nowell, L., Norris, J., White, D., & Moules, N. (2017). Thematic Analysis: Striving to Meet the Trustworthiness Criteria. *International Journal of Qualitative Methods*, 16(1), 1–13. <https://doi.org/10.1177/1609406917733847>
- Noy, C. (2008). Sampling Knowledge: The Hermeneutics of Snowball Sampling in Qualitative Research. *International Journal of Social Research Methodology*, 11(4), 327–344. <https://doi.org/10.1080/13645570701401305>

- Núñez-Canal, M., de Obesso, M. de las M., & Pérez-Rivero, C. A. (2022). New challenges in higher education: A study of the digital competence of educators in Covid times. *Technological Forecasting and Social Change*, 174, 121270. <https://doi.org/10.1016/j.techfore.2021.121270>
- NVivo: *Leading Qualitative Data Analysis Software* (Version 14.23.3 (61)). (2025). [Computer software]. Lumivero. <https://lumivero.com/products/nvivo/>
- Oke, A., & Fernandes, F. A. P. (2020). Innovations in Teaching and Learning: Exploring the Perceptions of the Education Sector on the 4th Industrial Revolution (4IR). *Journal of Open Innovation: Technology, Market, and Complexity*, 6(2), 31. <https://doi.org/10.3390/joitmc6020031>
- O'Leary, Z. (2004). *The Essential Guide to Doing Research* (1st ed.). SAGE Publications Ltd.
- Olson, M. H., & Ramirez, J. J. (2020). *An Introduction to Theories of Learning* (10th ed.). Routledge. <https://doi.org/10.4324/9781003014447>
- Opie, C. (2004). *Doing Educational Research* (1st ed.). SAGE Publications Ltd.
- Oxford Academic. (2024). *Oxford Academic* [Oxford University Press]. Oxford Academic. <https://academic.oup.com/>
- Paechter, M., Maier, B., & Macher, D. (2010). Students' expectations of, and experiences in e-learning: Their relation to learning achievements and course satisfaction. *Computers & Education*, 54(1), 222–229. <https://doi.org/10.1016/j.compedu.2009.08.005>
- Patel, M., Doku, V., & Tennakoon, L. (2003). Challenges in recruitment of research participants. *Advances in Psychiatric Treatment*, 9, 229–238. <https://doi.org/10.1192/apt.9.3.229>

- Patton, M. Q. (2015). *Qualitative Research & Evaluation Methods* (4th ed.). SAGE Publications Inc.
- Peters, O. (2003). *Distance Education in Transition: New Trends and Challenges*. <https://www.semanticscholar.org/paper/Distance-Education-in-Transition%3A-New-Trends-and-Peters/c914631115a0e8a42c64ca95505404725f0dac3c>
- Piaget, J. (1926). *The Language and Thought of the Child* (1st edition). Routledge & Kegan Paul Ltd.
- Pietkiewicz, I., & Smith, J. (2014). A practical guide to using Interpretative Phenomenological Analysis in qualitative research psychology. *Psychological Journal*, 20, 7–14. <https://doi.org/10.14691/CPPJ.20.1.7>
- Polkinghorne, D. E. (2005). Language and meaning: Data collection in qualitative research. *Journal of Counseling Psychology*, 52(2), 137–145. <https://doi.org/10.1037/0022-0167.52.2.137>
- Prensky, M. (2001). Digital Natives, Digital Immigrants Part 1. *On the Horizon*, 9(5), 1–6. <https://doi.org/10.1108/10748120110424816>
- Rannikmäe, M., Holbrook, J., & Soobard, R. (2020). Social Constructivism—Jerome Bruner. In B. Akpan & T. J. Kennedy (Eds.), *Science Education in Theory and Practice* (pp. 259–275). Springer International Publishing. https://doi.org/10.1007/978-3-030-43620-9_18
- Rashid, T., & Asghar, H. M. (2016). Technology use, self-directed learning, student engagement and academic performance: Examining the interrelations. *Computers in Human Behavior*, 63, 604–612. <https://doi.org/10.1016/j.chb.2016.05.084>

- Redecker, C. (2017). *European Framework for the Digital Competence of Educators: DigCompEdu* (EUR 28775 EN; p. 95). Publications Office of the European Union.
<https://publications.jrc.ec.europa.eu/repository/handle/JRC107466>
- Reid, L., Button, D., & Brommeyer, M. (2023). Challenging the Myth of the Digital Native: A Narrative Review. *Nursing Reports*, 13(2), 573–600.
<https://doi.org/10.3390/nursrep13020052>
- Reisdorf, B., & Rhinesmith, C. (2020). Digital Inclusion as a Core Component of Social Inclusion. *Social Inclusion*, 8(2), 132–137.
<https://doi.org/10.17645/si.v8i2.3184>
- ResearchGate GmbH. (2025). *ResearchGate*. Discover Scientific Knowledge and Stay Connected to the World of Science.
<https://www.researchgate.net/>
- Ridley, D. (2012). *The literature review: A step-by-step guide for students* (2nd ed.). SAGE Publications Inc.
- Roberts, K., Dowell, A., & Nie, J.-B. (2019). Attempting rigour and replicability in thematic analysis of qualitative research data; a case study of codebook development. *BMC Medical Research Methodology*, 19(1), 66.
<https://doi.org/10.1186/s12874-019-0707-y>
- Robson, C. (2024). *Real World Research* (5th ed.). Wiley.
- Rogers, C. (1961). *On Becoming a Person: A Therapist's View of Psychotherapy*. Houghton Mifflin Company. <https://www.books.ie/on-becoming-a-person-a-therapist-s-view-of-psychotherapy>
- Rost, M., & Wilson, J. J. (2013). *Active Listening*. Routledge.
<https://doi.org/10.4324/9781315832920>

- SAGE Journals. (2025). *Sage Journals: Discover world-class research* [SAGE Publications]. Sage Journals: Discover World-Class Research.
<https://journals.sagepub.com/>
- Saks, K., & Leijen, Ä. (2014). Distinguishing Self-directed and Self-regulated Learning and Measuring them in the E-learning Context. *Procedia - Social and Behavioral Sciences*, 112, 190–198.
<https://doi.org/10.1016/j.sbspro.2014.01.1155>
- Sanjari, M., Bahramnezhad, F., Fomani, F. K., Shoghi, M., & Cheraghi, M. A. (2014). Ethical challenges of researchers in qualitative studies: The necessity to develop a specific guideline. *Journal of Medical Ethics and History of Medicine*, 7, 14.
<https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4263394/>
- Santos, H., Batista, J., & Marques, R. P. (2019). Digital transformation in higher education: The use of communication technologies by students. *Procedia Computer Science*, 164, 123–130.
<https://doi.org/10.1016/j.procs.2019.12.163>
- Scheel, L., Vladova, G., & Ullrich, A. (2022). The influence of digital competences, self-organization, and independent learning abilities on students' acceptance of digital learning. *International Journal of Educational Technology in Higher Education*, 19(1), 44.
<https://doi.org/10.1186/s41239-022-00350-w>
- Schön, D. A. (1992). *The Reflective Practitioner: How Professionals Think in Action* (1st ed.). Routledge.
- Schumacher, D. J., Englander, R., & Carraccio, C. (2013). Developing the Master Learner: Applying Learning Theory to the Learner, the Teacher,

- and the Learning Environment. *Academic Medicine*, 88(11), 1635.
<https://doi.org/10.1097/ACM.0b013e3182a6e8f8>
- Skinner, B. F. (1938). *The Behavior Of Organisms: An Experimental Analysis* (1st ed.). Appleton-Century.
- Skinner, B. F. (1953). *Science and Human Behaviour*. Macmillan.
- Sloan, A., & Bowe, B. (2014). Phenomenology and hermeneutic phenomenology: The philosophy, the methodologies, and using hermeneutic phenomenology to investigate lecturers' experiences of curriculum design. *Quality & Quantity*, 48(3), 1291–1303.
<https://doi.org/10.1007/s11135-013-9835-3>
- Smith, M. G., Witte, M., Rocha, S., & Basner, M. (2019). Effectiveness of incentives and follow-up on increasing survey response rates and participation in field studies. *BMC Medical Research Methodology*, 19(1), 230. <https://doi.org/10.1186/s12874-019-0868-8>
- Snyder, H. (2019). Literature review as a research methodology: An overview and guidelines. *Journal of Business Research*, 104, 333–339.
<https://doi.org/10.1016/j.jbusres.2019.07.039>
- SOLAS. (2024, July). *Further Education and Training Strategy Implementation and Delivery*. Learning Works. <https://www.solas.ie/about/fet-strategy-implementation-and-delivery/>
- Spante, M., Hashemi, S. S., Lundin, M., & Algers, A. (2018). Digital competence and digital literacy in higher education research: Systematic review of concept use. *Cogent Education*, 5(1), 1519143.
<https://doi.org/10.1080/2331186X.2018.1519143>

- Spataro, S. E., & Bloch, J. (2018). "Can You Repeat That?" Teaching Active Listening in Management Education. *Journal of Management Education*, 42(2), 168–198. <https://doi.org/10.1177/1052562917748696>
- Streeton, R., Cooke, M., & Campbell, J. (2004). Researching the researchers: Using a snowballing technique. *Nurse Researcher*, 12(1), 35–47. <https://go.gale.com/ps/i.do?p=AONE&sw=w&issn=13515578&v=2.1&it=r&id=GALE%7CA122660692&sid=googleScholar&linkaccess=abs>
- Succi, C., & Canovi, M. (2020). Soft skills to enhance graduate employability: Comparing students and employers' perceptions. *Studies in Higher Education*, 45(9), 1834–1847. <https://doi.org/10.1080/03075079.2019.1585420>
- Sullivan, T., Slater, B., Phan, J., Tan, A., & Davis, J. (2019). M-learning: Exploring mobile technologies for secondary and primary school science inquiry. *Teaching Science*, 65(1), Article 1. <https://asta.edu.au/resources/teachingscience>
- Sumner, E. (2018). Factors related to college students' self-directed learning with technology. *Australasian Journal of Educational Technology*, 34(4). <https://doi.org/10.14742/ajet.3142>
- Tangney, S. (2014). Student-centred learning: A humanist perspective. *Teaching in Higher Education*, 19(3), 266–275. <https://doi.org/10.1080/13562517.2013.860099>
- Technological University Dublin. (2024a). *Computing Learning Centre*. Computing Learning Centre. <https://www.tudublin.ie/explore/faculties-and-schools/computing-digital-data/computing-learning-centre/>

- Technological University Dublin. (2024b). *Ethics & Integrity*. Research & Innovation. <https://www.tudublin.ie/research-innovation/research/ethics-integrity/>
- Technological University Dublin. (2024c). *Learning, Teaching & Assessment*. Academic Affairs. <https://www.tudublin.ie/explore/about-the-university/academic-affairs/lt/a/>
- Technological University Dublin. (2025). *IT Governance*. Technology Services. <https://www.tudublin.ie/connect/technology-services/it-governance/>
- Theofanidis, D., & Fountouki, A. (2018). Limitations and delimitations in the research process. *Perioperative Nursing - Quarterly Scientific, Online Official Journal of G.O.R.N.A.*, 7(3), 155–163.
<https://doi.org/10.5281/zenodo.2552022>
- Thomas, G. (2009). *How to Do Your Research Project: A Guide for Students in Education and Applied Social Sciences* (1st ed.). SAGE Publications Ltd.
- Thompson, M., Pawson, C., & Evans, B. (2021). Navigating entry into higher education: The transition to independent learning and living. *Journal of Further and Higher Education*, 45(10), 1398–1410.
<https://doi.org/10.1080/0309877X.2021.1933400>
- Tirri, K., & Toom, A. (2020). The Moral Role of Pedagogy as the Science and Art of Teaching. In *Pedagogy in Basic and Higher Education—Current Developments and Challenges*. IntechOpen.
<https://doi.org/10.5772/intechopen.90502>
- Tobin, G., & Begley, C. (2004). Methodological rigour within a qualitative framework. *Journal of Advanced Nursing*, 48(4), 388–396.
<https://doi.org/10.1111/j.1365-2648.2004.03207.x>

Tobin, K. (1993). *The Practice of Constructivism in Science Education* (1st ed.).
Routledge.

Tuma, F. (2021). The use of educational technology for interactive teaching in
lectures. *Annals of Medicine and Surgery*, 62, 231–235.
<https://doi.org/10.1016/j.amsu.2021.01.051>

UNESCO-UNEVOC International Centre for Technical and Vocational Education
and Training. (2024a). *TVETipedia Glossary—Digital literacy*. TVETipedia
Glossary.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=digital+literacy>

UNESCO-UNEVOC International Centre for Technical and Vocational Education
and Training. (2024b). *TVETipedia Glossary—Digital skills*. TVETipedia
Glossary.
<https://unevoc.unesco.org/home/TVETipedia+Glossary/lang=en/show=term/term=Digital+skills#start>

United Nations Educational, Scientific and Cultural Organization (UNESCO).
(2009). *Guide to Measuring Information and Communication
Technologies (ICT) in Education*. UNESCO Institute for Statistics.
http://uis.unesco.org/sites/default/files/documents/guide-to-measuring-information-and-communication-technologies-ict-in-education-en_0.pdf

University of Illinois Springfield. (2024). *Pedagogy, Andragogy, & Heutagogy*.
Center for Online Learning, Research and Service.
<https://www.uis.edu/colrs/teaching-resources/foundations-good-teaching/pedagogy-andragogy-heutagogy>

- van der Walt, J. L. (2019). The Term “Self-Directed Learning”—Back to Knowles, or Another Way to Forge Ahead? *Journal of Research on Christian Education*, 28(1), 1–20.
<https://doi.org/10.1080/10656219.2019.1593265>
- van Laar, E., van Deursen, A. J. A. M., van Dijk, J. A. G. M., & de Haan, J. (2017). The relation between 21st-century skills and digital skills: A systematic literature review. *Computers in Human Behavior*, 72, 577–588. <https://doi.org/10.1016/j.chb.2017.03.010>
- van Laar, E., van Deursen, Alexander J.A.M., & van Dijk, J. A. G. M. (2022). Developing policy aimed at 21st-century digital skills for the creative industries: An interview study with founders and managing directors. *Journal of Education and Work*, 35(2), 195–209.
<https://doi.org/10.1080/13639080.2022.2036710>
- van Manen, M. (1997). *Researching Lived Experience: Human Science for an Action Sensitive Pedagogy* (2nd ed.). Routledge.
<https://doi.org/10.4324/9781315421056>
- van Manen, M. (2014). *Phenomenology of Practice: Meaning-Giving Methods in Phenomenological Research and Writing* (1st ed.). Routledge.
<https://doi.org/10.4324/9781003228073>
- Vanclay, F., Baines, J. T., & Taylor, C. N. (2013). Principles for ethical research involving humans: Ethical professional practice in impact assessment Part I. *Impact Assessment and Project Appraisal*, 31(4), 243–253.
<https://doi.org/10.1080/14615517.2013.850307>
- Vuorikari, R., Kluzer, S., & Punie, Y. (2022). *DigComp 2.2: The Digital Competence Framework for Citizens - With new examples of knowledge*,

- skills and attitudes* (doi:10.2760/115376; EUR 31006 EN; p. 134).
Publications Office of the European Union.
<https://publications.jrc.ec.europa.eu/repository/handle/JRC128415>
- Vygotsky, L. S. (1978). *Mind in Society: Development of Higher Psychological Processes*. Harvard University Press. <https://doi.org/10.2307/j.ctvjf9vz4>
- Wanat, C. L. (2008). Getting Past the Gatekeepers: Differences Between Access and Cooperation in Public School Research. *Field Methods*, 20(2), 191–208. <https://doi.org/10.1177/1525822X07313811>
- Watts, N. (2018). *Developing Digital Fluency in Higher Education: A study in the acquisition of digital capability by academics in Irish higher education settings* [University College Dublin. School of Education].
<http://hdl.handle.net/10197/11559>
- Webb, P., & Pollard, C. (2006). Demystifying a Hermeneutic Approach to IS Research. *Australasian Journal of Information Systems*, 13(2), 31–48.
<https://doi.org/10.3127/ajis.v13i2.39>
- Whitelock, D., Goshtasbpour, Fereshte, Pitt, Beck, Ferguson, Rebecca, & Cross, S. (2024). Capacity building for digital education. *Open Learning: The Journal of Open, Distance and e-Learning*, 39(2), 105–111.
<https://doi.org/10.1080/02680513.2024.2317894>
- Whittemore, R., Chase, S. K., & Mandle, C. L. (2001). Validity in qualitative research. *Qualitative Health Research*, 11(4), 522–537.
<https://doi.org/10.1177/104973201129119299>
- World Economic Forum. (2023). *The Future of Jobs Report 2023* [Insight Report]. World Economic Forum.

<https://www.weforum.org/publications/the-future-of-jobs-report-2023/in-full/>

Yin, R. (2018). *Case Study Research and Applications: Design and Methods* (6th ed.). SAGE Publications Inc.

Zimmerman, B. J. (1989). A social cognitive view of self-regulated academic learning. *Journal of Educational Psychology*, 81(3), 329–339.

<https://doi.org/10.1037/0022-0663.81.3.329>

Zimmerman, B. J., & Martinez-Pons, M. (1990). Student differences in self-regulated learning: Relating grade, sex, and giftedness to self-efficacy and strategy use. *Journal of Educational Psychology*, 82(1), 51–59.

<https://doi.org/10.1037/0022-0663.82.1.51>

Zotero. (2025). *Zotero | Your personal research assistant* [Project of the Corporation for Digital Scholarship]. Zotero. <https://www.zotero.org/>

Zutlevics, T. (2016). Could providing financial incentives to research participants be ultimately self-defeating? *Research Ethics*, 12(3), 137–148.

<https://doi.org/10.1177/1747016115626756>

Appendix A: Keyword Search List

KEYWORDS
Andragogy
Blended learning
Collaborative learning
Digital citizenship
Digital competence
Digital fluency
Digital literacy
Digital migration
Digital skills
Digital tools
Education technology
e-Learning
European digital directives
Heutagogy
Higher education
Independent learning
Learner autonomy
Learning experiences
Lifelong learning
Online learning
Pedagogical strategies
Pedagogy
Self-determined learning
Self-directed learning
Student skills development
Student success
Student-centred learning

Appendix B: Ethics Committee Approval



Learning, Teaching
& Assessment
(LTA),

lta@tudublin.ie

Date: December 17th, 2024

To: Jennifer Dean

Ethics Reference No: <i>Please quote this ref on all correspondence</i>	SSLE-REC-24-18
Project Title:	A phenomenological study on the enabling role of digital competencies in heutagogical learning contexts.

Dear Jennifer,

Thank you for submitting your application.

LTA Ethics Committee grants ethical approval for this project.

Please note that if there are any subsequent changes to the research as described in your amended submission, these changes must be approved by the committee in advance of the implementation of these changes. In this case, please email lta@tudublin.ie with your reference code and instructions on how to proceed will be provided.

The committee wishes you the best of luck with your research project.

Yours Sincerely

Appendix C: Participant Information Sheet



Participant Information Sheet

Research Project Title: A phenomenological study on the enabling role of digital competencies in heutagogical learning contexts.

Researcher: Jennifer Dean

Supervisor: Dr. Ciarán O’Leary

You are invited to participate in this research project, which is being carried out by Jennifer Dean, as part of submission requirements for MSc in Education (Digital Innovator).

Your participation is voluntary. If you do decide to take part but subsequently change your mind, you are free to withdraw at any time without giving a reason and without any consequences of any kind.

This research aims to explore student experiences with digital literacy, digital skills, tools and technologies in university, particularly focusing on how these elements influence and enable students’ independent or self-directed learning.

The research will examine:

- (1) how digital skills contribute to independent or self-determined learning—looking at whether and how these skills help students take charge of their own learning by exploring and applying knowledge on their own.
- (2) how digital literacy affects students’ ability to learn independently, investigating how digital literacy enhances capacity for self-guided learning.

In order for you to decide to participate or not, it is important for you to understand why the research is being done and what it will involve. Please take time to read the following information and contact me if there is anything you would like clarified or if you would like more information.

If you agree to take part, you will be asked to sign a consent form and will be invited to volunteer to participate in an online Microsoft Teams interview of no more than 45 minutes which will ask you questions about your experiences in university with digital literacy and independent, self-directed learning. The interview will be recorded with your permission (audio only, no video) and held securely in the university's secure cloud OneDrive. You will be verbally informed that the interview is about to begin and that the audio recording will start. Once the interview recording has begun, a verbal reminder will be given again that the meeting is being recorded with audio-only.

Answering questions about your university experiences within the context of self-directed learning or digital competencies may cause you discomfort, particularly because your experiences are unique and personal to you. Should any of the interview questions make you uncomfortable, you do not have to answer them. You can say "pass" or "next question" and we will move on. You can stop the interview at any time and request that your answers are not used in the study.

If you experience any problems with the research, then please bring this to my attention immediately. If it is not appropriate to address your concerns to me, then you can contact any of the other people involved in the research to seek further clarification and information. Those contact details are available at the end of this document.

Your participation in this research study could provide valuable insights into student experiences with digital tools, technologies and independent, self-directed learning. This could result in policy or procedure changes regarding online learning tools and supports which could enhance learning and the Higher Education experience for learners.

The results of the research will be used to write my thesis, which will be submitted in July 2025. After the thesis is examined, it may be stored with Arrow, the open access institutional repository of Technological University Dublin where it will be accessible to the public. In addition the information collected during the project might be used for a journal article, but you will not be identified in any report or publication.

All information collected during the research will be kept strictly confidential and all data will be anonymous so that individuals or the university cannot be recognised in it. This will be done by anonymising your information through an alternative participant naming convention method such as 'Interviewee 1, 2 and 3'. Written transcriptions will be made for analysis. The meeting recording (with audio only) will be stored in Microsoft Teams and a transcript will be automatically generated using the platform's built-in transcript feature. All information collected during the research will be stored within the university's secure cloud server and will be available only to the present investigator Jennifer Dean. Extracts of the data from this research project may be published in future.

Contact for further information:

Researcher	Supervisor	Course Coordinator
Jennifer Dean	Dr. Ciarán O'Leary	Edel Gallagher
TU Dublin	TU Dublin	TU Dublin
D23124920@mytudublin.ie	ciaran.oleary@tudublin.ie	edel.gallagher@tudublin.ie

Appendix D: Participant Consent Form



Researcher's Name	Jennifer Dean		
Academic Unit	Academic Affairs		
Title of Study	A phenomenological study on the enabling role of digital competencies in heutagogical learning contexts.		
The following section should be completed by the research participant			
	Yes	No	
Have you been fully informed of the nature of this study by the researcher?	☐	☐	
Have you had an opportunity to ask questions about this research?	☐	☐	
Have you received satisfactory answers to all of your questions?	☐	☐	
Have you received sufficient information about the potential health and/or safety implications of this research?	☐	☐	
Have you been fully informed of your voluntary participation in the research?	☐	☐	
Have you been fully informed of your ability to withdraw participation and/or data from the research?	☐	☐	
Have you been fully informed of what how interviews will be conducted and data transcribed?	☐	☐	
Have you been fully informed of what will happen to data generated by your participation in the study and how it will be kept safe?	☐	☐	
Do you agree to take part in this study, the results of which may be disseminated in an open access institutional repository, scientific publications, books or conference proceedings?	☐	☐	
Have you been informed that this consent form shall be kept securely and in confidence by the researcher?	☐	☐	
Name of Participant	Please use block capitals		
Signature of Participant		Date	
Signature of Researcher		Date	

Appendix E: Interview Invitation Email

Subject: Invitation to interview

Dear [Name],

You may remember I contacted you several weeks ago about voluntary participation in a research project interview.

I am inviting you to contribute to my research project by completing an interview, which should not take more than 45 minutes of your time. If you had time to spare, I would greatly appreciate if you could take part in the interview, which will take part online by MS Teams. The interview will be scheduled online between [START DATE] and [END DATE] but at a specific date and time that suits you. The interview will be recorded with your permission (audio only, no video) and held securely in OneDrive. The audio meeting recording will be stored in Microsoft Teams and a transcript will be automatically generated using the platform's built-in transcript feature.

The data I am collecting will only be used in the project and not used for any other purpose and is completely anonymised. For more information about the research and how your data will be anonymised, handled and used, please see the attached participant information sheet.

If you agree to take part, please fill in and sign the attached consent form and return it to [EMAIL] by [DATE].

If you have any questions, please contact by email me on [CONTACT EMAIL HERE].

Many thanks for your help.
Jennifer Dean

Appendix F: Interview Schedule



Interview Schedule

Research Project Title: A phenomenological study on the enabling role of digital competencies in heutagogical learning contexts.

Researcher: Jennifer Dean

Supervisor: Dr. Ciarán O'Leary

Section 1: to gauge understanding of independent learning.

1. How would you define independent learning or self-directed in your own words?
2. When you think of self-directed learning, what specific skills or qualities come to mind?
 - **Prompt:** Do you feel you have these skills?
 - **Prompt:** Are they something on which you are actively working?
3. Can you tell me about a specific experience where you learned something entirely on your own?
 - **Prompt:** How did that experience make you feel?
 - **Prompt:** How did you go about that - were there steps you always followed, like setting goals, making a timeline, or keeping an eye on your progress?

Section 2: to gauge understanding of digital literacy in learning.

4. Which digital skills do you feel are essential for independent learning?
 - **Prompt:** Do you feel you have these skills?
 - **Prompt:** Are they something on which you are actively working?
5. In your experience of using digital resources, do you prefer quick, one-time answers, or do you find yourself engaging with these resources as part of an ongoing learning process?
 - **Prompt:** Which approach do you feel benefits you more? And why.

Section 3: exploring experiences of digital literacy challenges in learning.

6. Can you share a learning experience when you encountered challenges with digital tools or technologies (e.g., information overload, finding credible online info sources, device or technology difficulties?)

- **Prompt:** Can you explain how this challenge made you feel?
 - **Prompt:** Did it discourage you from continuing, or did you find a way around it?
 - **Prompt:** How do you handle it?
7. Do you feel it is important to improve digital literacy skills to enhance the independent learning experience?
- **Prompt:** If so, why? If not, why not?
 - **Prompt:** What does/would motivate you?
8. Can you share an experience where you felt there was a lack of resources or support in your learning that could have made your independent learning easier?
- **Prompt:** How did this situation make you feel?
 - **Prompt:** How did you handle the situation?

Section 4: to gauge confidence with digital tools for independent learning.

9. Can you share an experience where you felt overwhelmed or limited by your digital literacy level?
- **Prompt:** What did you do to manage this?
10. Can you describe a time when learning a specific digital skill made you feel more capable as an independent learner?
- **Prompt:** what digital skill did you work on and what motivated you to develop it?
 - **Prompt:** How did this experience help you tackle learning tasks on your own?
11. Based on your experience, do you feel confident in using digital tools to support and enhance your independent learning?
- **Prompt:** If yes, how?
 - **Prompt:** If no, why do you think that is?

Section 5: Reflection.

12. Looking back on your time in university, are there any tools or techniques you now rely on that you did not use earlier?
- **Prompt:** If yes, can you describe how have they changed the way you approach learning?
 - **Prompt:** If not, why do you think that is?
13. When you think of your time in university, do you think your approach to learning has changed as you have gained more experience with both digital literacy and independent learning?

- **Prompt:** If so, how?
- **Prompt:** If not, why do you think that is?

14.Based on your experiences, what advice would you give a fellow student looking to improve their digital literacy and become a more independent learner?

15.Looking ahead, how confident do you feel about the digital literacy skills gained in university to meet workplace challenges?

- **Prompt:** Do you feel you may have gaps in your digital skills to meet expectations in the workplace?
- **Prompt:** How would you consider addressing this?

Section 6: Wrap-up.

16.Finally, is there anything else you would like to share about your experiences with digital literacy and self-directed learning that we haven't covered?