Visualising Threshold Concepts in Social Care through the Semiotic Lens of Inquiry Graphics: Developing Threshold Graphics

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Declaration

This thesis results entirely from my own work and has not been offered previously for any other degree or diploma. This thesis is 45,747 words in length, does not exceed the permitted maximum and has been formally approved by the body or officer with delegated authority from Senate.

Signature .....

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Abstract

This study applied the recent concept of 'threshold graphics' (Lackovic, 2020) and developed it further in the context of professional social-care education. Threshold graphics are pictorial images selected and analysed by a learning community for critical and deep thinking about threshold concepts across disciplines (ibid.).

Many studies of threshold concepts (TCs) have followed the seminal work in this field by Meyer and Land (2003). However, there is a scarcity of studies that research the teaching of TCs in depth through pictorial images such as photographs, other than Lackovic (2020). This study addresses this gap, building on the concept of 'threshold graphics' (Lackovic, 2020): it develops a unique threshold graphics classification for the field of social care. The key novelty of the threshold graphics approach applied in this thesis is that it embeds inquiry graphics theory and method, based on semiotics (how signs of communication make meaning to learners).

An inquiry graphics analysis was applied, which is, in principle, a photo-elicitation method that integrates inquiry graphics. The method was applied to 45 participants, including students, graduates and educators at Irish higher education institutions, within the programme in social-care education. Four researcher-provided photographs and varying numbers of participant-provided images were analysed by the participants in semi-structured interviews at various locations across Ireland. Of the 45 people who participated, 27 educators taught various subjects on social-care programmes, including knowledge contributors or those who had researched and published in social care. Six students were currently in a level 7 or 8 social care programme, and 12 graduates had a level 7 or 8 social care qualification and were working in social care. NVivo™ software provided a platform for a mix of thematic and inquiry graphics analysis guided by the following research questions:

(1) What 'threshold concepts (TCs)' are identified within social care subjects, by three key user groups (lecturers (knowledge contributors), current students and graduates), via an 'inquiry graphics' photo-elicitation research method?

(2) How is an 'inquiry graphics' (IG) & 'threshold graphics' visual teaching method evaluated by lecturers, graduates and students with regard to learning 'threshold concepts' and overcoming 'troublesome knowledge'?

(3) How is visual content related to the conceptual meaning of TCs when applying IG in both research methods and teaching contexts? What does that mean for teaching and learning threshold concepts with images (as an approach to threshold graphics)?

(4) What does this experience and method tell us about how we think about concepts and images?

The researcher identified the overarching threshold concept of Self-Other in social-care education, 14 threshold concepts (TCs) and 80 integral concepts (ICs). The introduction of integral concepts (ICs) is one of the key innovations of this study, offering an original perspective that threshold concepts are broad, overarching concepts that underpin disciplines and represent a larger field of knowledge that students often struggle with – they embed many integral concepts, which are integral to TC development and represent more concrete but also troublesome concepts. Threshold and integral concepts form a rhizomatic concept network. This network helps our understanding of how concepts in a domain (here: social care) are not standalone entities but form connections with and between themselves and threshold concepts (TCs) within a wider rhizomatic network of disciplinary concepts, programmes, learners' and teachers' experiences and interpretations. This conceptualisation builds on the proposition that concepts are complex, ever-growing interpretative entities called 'rhizomatic concepts' or 'concept-rhizomes' (Lackovic, 2020). Their meanings branch depending on the interrelations of learners' and teachers' interpretations (of studied concept resources), experiences and the given context where threshold graphics are applied.

The inquiry graphics photo-elicitation method was found to be effective in accessing the troublesomeness of concepts and for the exploration of their meaning through reflective engagement and active analysis by participants of visual signs in images. The threshold graphics method applied is a critical visual, pedagogical and analytical tool in higher education pedagogy, not just in social care but beyond it. The study suggests

that it has significant potential as a teaching and learning approach, as it can reveal troublesomeness, and offer new interpretations of and perspectives on social-care concepts. However, it is recommended that educators receive specific educational training regarding an inquiry graphics approach and analysis skills, especially the process of selecting images (by a student and/or an educator), providing emotional support, tackling time restraints and working with large/small groups that can present challenges for implementation.

The findings contribute to our knowledge in conceptual learning. In particular, it advances our knowledge of how concepts are formed through pictorial images and, therefore, adds to the specific fields of: higher education teaching and learning as an umbrella field, threshold concepts, visual semiotics/learning in education, inquiry and threshold graphics and social-care education as domain-specific knowledge. The findings can inform future threshold concept studies by addressing how troublesome concepts interconnect and underpin threshold concepts to form rhizomatic networks and how they can be investigated through pictorial images, an area which is mostly under-recognised, under-researched and unacknowledged. The study can also inform a comprehensive design and methodological approach to planning and teaching social-care programmes as well as related disciplines. Further research could investigate, evaluate and develop threshold graphics in other disciplines and with other pictorial media, such as videos, illustrations, diagrams, paintings, and sketches of infographics.

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Acknowledgements

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List of Abbreviations

SCW	Social Care Work
SC	Social Care
SCEd	Social Care Education
IG	Inquiry Graphics
IGF	Inquiry Graphics Framework
TG	Threshold Graphics
TC	Threshold Concept
IC	Integral Concept
TR	Threshold Rhizome
T&L	Teaching and Learning
VL	Visual Literacy
HE	Higher Education
ACEs	Adverse Childhood Experiences
BLM	Black Lives Matter

Chapter 1: Introduction – The Research Gap and Contribution to Knowledge

1.1 Introduction

Irish social care, after many years, is on the cusp of professionalisation, and social-care education is also going through momentous changes. Incoming professional regulations and standards have focused on learning proficiencies, and colleges are currently overhauling their programmes. This process will result in standardised programmes and external accountability. This study is timely as it will inform this process, as outlined in the following chapters.

1.2 The Research Gap

1.2.1 My Own Motivation and Experience of the Gap

As an educator on a social-care programme, I was motivated to undertake this study by witnessing students' growth and struggles as they transformed from novice first-years to competent professionals. I wondered what kind of concept learning prompted this. Threshold concepts theory, inquiry graphics theory and semiotics offered a lens through which to view and investigate this transformation. They provided two critical aspects of learning practice that I was particularly interested in: how conceptual learning develops and the stumbling blocks in this development, and how visual media mediate learning. As a lecturer in creative studies and an art therapist, I have witnessed the power of images for healing and learning and how they can knowingly or unknowingly strongly influence our thinking, behaviours and beliefs. I also noticed the general lack of research on threshold concepts in Irish social care and the use of visual media in disciplinary teaching. From this position, and informed by the reviewed literature, I conducted this research to better understand what troublesome concepts were thresholds and whether visuals could be used for teaching and learning, for conceptual expansion, critical reflection and inquiry.

1.2.2 Threshold Concepts in Social Care

Like any other discipline and subject, social-care students grapple with many complex concepts, but once these are understood, they lead to 'transformative' learning. Such concepts have been identified as "threshold concepts" (TCs) (Land, Meyer, & Flanagan, 2016a; Land, Meyer, & Smith, 2008; Meyer, Land, Baillie, Meyer, & Baillie, 2010). There

has been no threshold concept research in Irish social care and relatively little in health, social work and child and youth care in Ireland (Barradell, 2013; Steckley, 2020a). Academic commentaries within Irish social care have also acknowledged these gaps, with speculation on placement as a liminal space for professional identity formation (Byrne-Lancaster, 2017), and how the 'self' and personal experiences might contribute to conceptual interconnectedness and socio-emotional learning (Prendergast, 2017). In addition, both nationally and internationally, no studies have focused on how educators could use images to teach threshold concepts in social care and other healthcare professions. Therefore, this study is innovative and new as it addresses these knowledge gaps, building on 'inquiry graphics' (Lacković, 2020a) to understand how pictorial images can be used to teach and critically unpack troublesome concepts to reveal understandings and, indeed, misunderstandings.

1.2.3 Inquiry Graphics to Understand Concepts in Disciplines

Social-care students and workers deal with social-care concepts through everyday problems and challenges rooted in real-world experiences strongly linked to the emotional and material worlds, such as environments, things and situations. Images can serve the role of bringing in material manifestations of the outside world and imaginative associations and metaphors to learning concepts in any discipline, social care not excluded (Lacković, 2020b). There are two main reasons why images can help in learning concepts. First, it is their potential to mediate and uncover multiple interpretative meanings by students who choose or create them, and students and teachers who can join in a collaborative act of interpretation (Lacković, 2010, 2020a). By doing so, teachers engage students' creative and reflective faculties, exemplifying that concepts are indeed subject to personal experiences and interpretations, and much more than simple definitions. Second, as mentioned above, their ubiquitous nature in our modern hypervisual and image-oversaturated culture constantly engages the viewer – we need to stop, pause, slow down and use images for deeper reflection and analysis. Educators have, with the advances in technology, realised some of the visual's potential (Exley et al., 2004), such as in PowerPoint presentations (Chávez Herting et al., 2020; Frey & Birnbaum, 2002), for their explanatory or summary function (Pozzer-Ardenghi & Roth, 2004), to decorate (Cyphert, 2004; Gabriel, 2008;

Kjeldsen, 2006), prompt memory and recall (Schraw et al., 2014), and for the retention of information (Thomas et al., 2008). However, this is still an underexplored area despite the work done to explore and categorise the use of images for learning in lectures (Hallewell & Lacković, 2017). Indeed, visual pedagogy, and especially semiotics, is not a mainstream approach in higher education and is 'left' to specialised disciplines in the arts, language and communication (Lacković, 2020a; Semetsky, 2016a).

IG is a new, cutting-edge educational approach that interconnects semiotics, arts and humanities, learning sciences and psychology. Essentially, it is about learning and thinking with images in higher education, observing pictorial and sensory media as an integral part of concept development. At the core of IG, and indeed this research, is Lacković's (2020a) argument that 'knowledge development' is 'embodied, distributed, multimodal and multisensory' (Lacković, 2020a, p.19). Inquiry graphics (IG) is, then, an '"art-science"' integrated approach (Lacković, 2020a, p.20) that can, for example, turn 'graphics into inquiry artefacts to slow down unreflective image consumption' (Lacković, 2020a, p.16). In today's world of visual image frenzy on social media and in everyday communication, such a 'slow-picture' approach is needed, alongside other 'slow' approaches (Lacković & Hurley, 2021). This can counter the unreflective, speedy image consumption that leaves subconscious imprints of visualised values on the mind, which education needs to bring to the surface and challenge. I propose that IG can be deployed in four ways and forms the basis of this research: (a) as a theoretical approach, (b) as a critical visual and pedagogic tool in teaching, (c) as a research method combined with photo-elicitation, and, connected to (c), as a (d) guide for critical visual analysis when applied in research. I will discuss these further in Chapter Two, section three.

An IG analysis (Lacković, 2018), for example, has three flexible stages of analytical interpretation, when used with images: (1) the representamen-led (observing and stating the embodied sign, what it consists of), (2) the interpretant-led (providing image descriptions) and (3) anchored object stage (led by research/ analysis/ teaching questions and analytical inquiry goals that link image content with conceptual content

and the conceptual goal of analysis). The first stage is observational or perceptive and involves listing and numbering the observed visual elements (signs) in the image. The second stage has two steps. The denotation-focused step asks for a basic description by using qualitative adjectives to describe what something that is observed is like, how it feels and what is happening in an image. This is followed by connotation-focused questions, asking for contextual meanings and presumptions based on a denotative description. The third stage, the anchored object, synthesises the first two phases through research or inquiry questions. This can be informed by a theory, which will focus on interpretations. In simple terms, the IG method involves a focused reflective, creative and analytical thinking process applied to taught concepts. Some of the benefits of this approach for teaching and learning concepts stemming from empirical research include: helping students to relate to/tap into learners' own experience and image of a concept, imagine conceptual possibilities, practically 'manifest' abstract concepts via the material world to bridge concept abstraction with the phenomenology of the material world, show that concepts are rich and complex entities beyond concept definitions dependent on contexts and interpretations, make connections between seemingly unconnected objects and ideas, reveal misconceptions and open up an engaging discussion among peers supported by the teacher (Lacković, 2020a). Therefore, this study sought to identify threshold concepts in social-care education using an inquiry graphics photo-elicitation method – this approach of combining threshold concepts and inquiry graphics is termed "threshold graphics" (ibid.).

In this section, I have provided a brief introduction to the concept of inquiry graphics for exploring challenging concepts through graphics and different forms of visual representations. The theory is elaborated in Chapter Two, and the associated methodology is presented in Chapter Three.

1.2.4 Contribution to Knowledge

By focusing on social-care education (Mc Hugh & Byrne, 2014), this study makes a contribution to knowledge by identifying TCs that inform curriculum design in various disciplines (Wright & Gilmore, 2012) and evaluating 'threshold graphics' (Lacković, 2020a, p.145), as the application of pictorial images, collectively called "graphics"

(Lacković, 2020a, p.119) to support the teaching of TCs. Therefore, the research aims to advance our knowledge in social-care education, threshold concepts pedagogy and related innovations when using images to teach and learn threshold concepts. In terms of practical implications and impact, it aims to inform (1) future programme design in social-care education and (2) provide advice on critical visual analysis through "threshold graphics" as a pedagogical approach to teaching concepts in social and health-related sciences (3) and potentially introduce a novel visual method and analysis to TC research and practice more broadly. In addition, research using edusemiotic theory, which argues for the value of semiotics in educational theory and practice, has focused mainly on linguistic communication (Semetsky, 2019) and the fields of linguistics, media and communication or philosophy, with images being rarely addressed with regard to their role in learning, and threshold concepts in particular. This study recognises images as contributors to knowledge, aligned with the inquiry graphics arguments that images are not mere add-ons or illustrations in teaching and learning but are needed to bridge the abstract and concrete sides of knowledge and concept-building (Lacković, 2020a). In agreement with this argument, Danesi (2009) identifies a lack of practical frameworks looking at 'how human representational systems are learned and how these can be used to construct appropriate pedagogical curricula and methods' (Danesi, 2009, p.vii).

1.3 Research Aim, Paradigm and Research Questions

This phenomenological study aims to understand educators', students' and graduates' perceptions of uncomfortable and troublesome concepts through applying threshold graphics to identify threshold concepts in social-care education. At this point, I will briefly state my ontological and epistemological position. I am ontologically aligned with the relative pragmatic position of the social constructivist world view of reality, with multiple subjective realities that are socially constructed (Berger & Luckmann, 1991; Guba & Lincoln, 1982). My epistemological position then defines *knowledge* as an inaccessible 'truth' (McCarthy, 2005), yet a subjective occurrence, formulated within the space between the actors and is thus in continuous flux and flow within a defined context.

This phenomenological study explores the learning of threshold concepts from the perspective of those who have experienced it (Neubauer, Witkop, & Varpio, 2019) and uses a pragmatic semiotic approach to education that combines the perspectives of educational semiotics and the related approaches of inquiry graphics, social semiotics and photo-elicitation methodology. I used a visual-research method, the IG photo-elicitation approach, based on Peircean semiotic theory, as it offered a versatile tool to enable deep exploration. Therefore, this interpretative approach to accessing knowledge with images offers an explicit means for participants to perceive and access their experiences (Jonathan Smith, Flowers, & Larkin, 2009).

Main Research Questions:

(1) What 'threshold concepts' (TC) are identified within social-care subjects by three key user groups – lecturers (knowledge contributors), current students and graduates via a threshold graphics method?

- What characteristics and types of threshold concepts are experienced, identified and reflected on?
- To what extent are the identified TCs similar (convergent) and distinct (divergent) among the groups?

(2) How is a 'threshold graphics' visual-teaching method evaluated by lecturers, graduates and students with regard to learning 'threshold concepts' and overcoming 'troublesome knowledge'?

- What characteristics of the method do the participants find beneficial or challenging, and why? What does stand out for them, if anything? What forms of conceptual knowledge and engagement does it afford, or not?
- How does the method help, or not, the participants to reflect on their own knowledge, and how do the students evaluate it with regard to overcoming the liminality of TCs?

(3) How is the visual content related to the conceptual meaning of TCs when applying IG in both research methods and teaching contexts? What does that mean for teaching and learning threshold concepts with images (as an approach of threshold graphics)?

- What kinds of flexible taxonomies of chosen photographs can be concluded with regard to their content (e.g. showing people) and their function (e.g. metaphor)?
- To what extent are educators' (knowledge contributors), students' and graduates' chosen photographs to represent TC concepts similar (convergent) and distinct (divergent)?
- How do these different groups interpret the same photographs provided by the researcher as related to the TC? To what extent are their interpretations convergent or divergent, and what does that mean for teaching-learning practice?
- What are the salient photographic features reported by participants that lend themselves to conceptual exploration and inference in the context of research methodology?
- What is the role of naming elements, denotation and connotation IG reasoning in understanding TCs?
- What can be observed about using IG visual content to facilitate learning TCs?

(4) What does this experience and method tell us about how we think about concepts and images?

- What implications does it have for social care and general higher education?

1.4 Thesis Structure

This thesis comprises five chapters, outlined as follows:

1) Chapter One has given an overview of the research gap, personal motivation, threshold concepts in social care, contribution to knowledge and inquiry graphics to understand concepts in disciplines, the research aim, paradigm and research questions.
2) Chapter Two is divided into four sections, each explaining the theoretical approach taken and a review of relevant literature.
    1. Section one outlines Irish social-care historical timelines and how this has influenced concepts taught in SC education.
    2. Section two explains threshold concept theory, asks what a concept is, and outlines the pedagogies applied to teach and learn threshold concepts and those identified in the social and healthcare professions.
    3. Section three outlines the four contributions of Lacković's (2018) Inquiry Graphics (IG) theory: (a) as a theoretical approach in higher education, (b) as a critical visual tool in teaching and learning, (c) as a visual inquiry research method combined with photo-elicitation and (d) the characteristics of IG as a critical visual analysis applied in research.
    4. Section four outlines a novel approach to teaching TCs using photographs with the development of 'threshold graphics' (Lacković, 2020a, p.142) as a critical visual inquiry tool.
3) Chapter Three outlines the methodology and methods used in the research.
4) Chapter Four sets out the findings regarding the research questions.
5) Chapter Five conducts a discussion based on the findings and limitations.
6) Chapter Six sets out the conclusion and recommendations.

Chapter 2: Conceptual Framework and Literature Review

2.1 Introduction

This chapter will set out the conceptual framework and review related literature. The conceptual framework guiding this study incorporates inquiry graphics and threshold concept approaches, which can also be seen as distinct but also related theories or approaches in conceptual development (Fig. 1), resulting in "threshold graphics" (Lacković, 2020a).

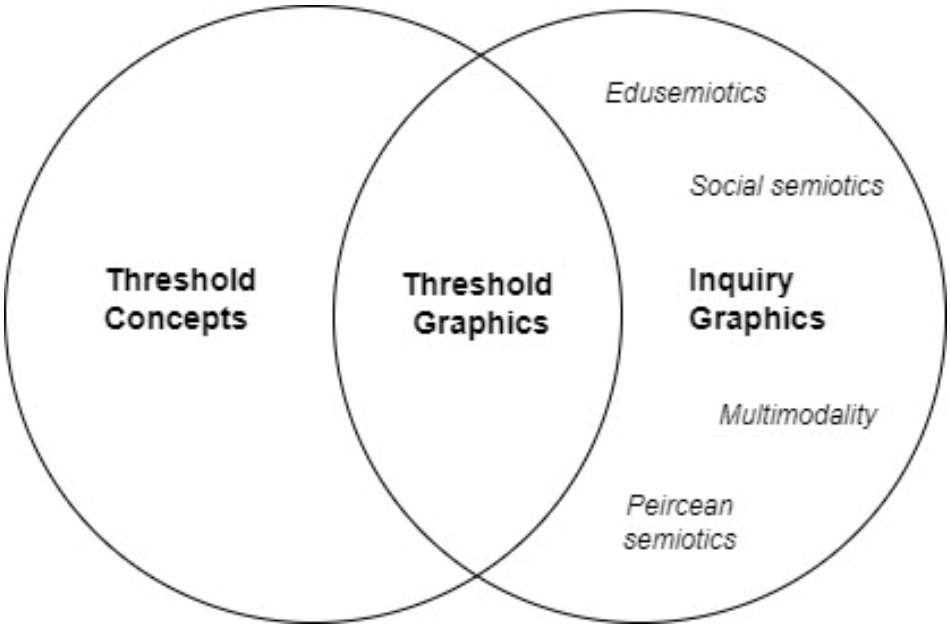

Figure 1: Conceptual framework. Threshold concepts, inquiry graphics and threshold graphics

The following sections discuss these theories and the social-care conceptual context. Section 1 outlines the historical origins of social-care concepts and related literature. Section 2 outlines threshold concept theory, defines a concept, offers an overview of approaches to teaching TCs and presents the TCs identified in the social and healthcare professions. Section 3 is subdivided into four sections focusing on inquiry graphics as (a) a theory, (b) a critical visual tool used in teaching and learning, (c) a visual inquiry research method combined with photo-elicitation and (d) a critical visual analysis approach applied in research. Section 4 brings the previous sections together to outline the potential of threshold graphics as a critical visual inquiry tool.

2.2 Irish Social Care

In this section, I define social care and explain the historical development of Irish social-care education as a significant aspect of professional formation (Fortune, Barradell, Kennedy-Jones, & Jones, 2014; Peseta, Fortune, Jones, Barradell, & Kennedy-Jones, 2018). By doing so, I am arguing that the field is still nascent and developing, which calls for teaching and learning support and interventions to understand what staff and students define as threshold concepts in this developing field of study, thus benefiting staff who teach in the area. Professional social-care educational programmes are relatively new, emerging from inquiry reports, legalisation and policies calling for qualified staff. The following section sets out the historical and sociocultural context, and in doing so, I also identify the origins of many of the concepts and, indeed, troublesome concepts taught in educational programmes. My argument is that relatively little attention has been paid to how images could be used to teach troublesome concepts through the semiotic unpacking of historical and sociocultural origins surrounding personal meanings.

First, CORU (2022b), the multi-profession health regulator tasked with overseeing the statutory registration of social care, defines social care workers as:

> …professional practitioners engaged in the practice of social care work. Social care work is a relationship-based approach to the purposeful planning and provision of care, protection, psychosocial support and advocacy in partnership with vulnerable individuals and groups who experience marginalisation, disadvantage or special needs. Principles of social justice and human rights are central to the practice of Social Care Workers. (CORU, 2022a)

Social-care practice has grown from and is deeply entwined with Irish history and spans two countries: the UK and Ireland. It begins with the impact of the Irish potato famine (1845–1849), which displaced and killed an estimated one million people, leaving many destitute poor to seek out workhouses (Poor Relief (Ireland) Act, 1838). The Irish welfare system advanced from legislation in the UK, and with the establishment of the Irish Free State in 1922, it was developed further in Ireland (The Children's Act (Ireland), 1929).

The dominance and failings of some religious care caused a shift to a neoliberal state based on 'choice' and the separation of church and state. These developments hastened the introduction of state-funded care in the 1970s and '80s. At that time, the religious orders working with the state stepped in to provide for the welfare needs of those who were vulnerable, destitute and requiring redemption. Religious involvement in care came under scrutiny with the publication of inquiries (Kennedy, 1970; *Mother and Baby Homes Commission of Investigation Final Report*, 2021; *Task Force on Child Care Services: Final Report*, 1980; The Law Reform Commission, 1990; Tuairim Report, 1966) exposing gross failings, and Irish society began to question their role and the complicity of the state. Prominent among the areas of investigation were child abuse in families, state care and child deaths. From the 1990s onwards, the government and independent bodies conducted 29 inquiries and reviews regarding concerns over the abuse and deaths of children known to child-protection services (Department of Children and Youth Affairs & The Irish Research Council, 2008), and over 32 child-related pieces of legislation were enacted (Department of Children and Youth Affairs & The Irish Research Council, 2008). This inquiry process altered public perceptions and attitudes (Department of Children and Youth Affairs & The Irish Research Council, 2008), highlighted failures and made recommendations in the areas of law, policy (Considine & Dukelow, 2014), interagency collaboration and cooperation, roles and responsibilities, inspection, procedures, protocols and training, to name a few. These reports, inquiries and media exposés (Kenny, 2009) established official expectations and statutory responsibilities based on concepts such as state involvement with families, equality and children's rights.

Again, improvements in disability services resulted from various reports (Commission of Inquiry on Mental Handicap Report, 1965; Commission on the Status of People with Disabilities, 1996; Department of Health & Social Welfare, 1984; United Nations General Assembly, 1993), policies (Commission on the Status of People with Disabilities, 1996; Department of Health, 1990) and acts (Equal Status Act, 2000; National Disability Authority Act, 1999). These reports recognised the role of the state as a positive enabler through law enforcement and policy, and they influenced the meaning of concepts such as: discrimination, respect and dignity, accessibility, equality

of opportunity (Hanlon, 2009) between men and women (Mulkeen, 2013), evolving capacities of children with disabilities (Finnerty, 2013), preservation of identities, full participation and engagement, inclusion, freedom, independence (Killeen, 2014), the medical and social model (Grubgeld, 2020; Linehan et al., 2014) and person-centred care (Thompson, Kilbane, & Sanderson, 2008).

The inquiries and resultant public outcry called for qualified staff (Kennedy, 1970; Tuairim Report; 1966,*Task Force on Child Care Services: Final Report*, 1980; South Eastern Health Board, 1993; *Report of the Commission to Inquire into Child Abuse Vol.1-5*, 2009). Colleges then introduced social studies courses across the country, the first being the Kilkenny course, training residential 'child care' workers in the 1970s, run by the Vocational Education Committee in Dublin (*Task Force on Child Care Services: Final Report*, 1980). After establishing the National Council for Educational Awards (NCEA) in 1972, Diplomas in Child Care followed in 1974 in Dublin, Waterford and Sligo Regional Technical colleges (RTCS). As of 2022, 18 education providers, including private colleges, deliver 40 programmes (CORU, 2022a). Programmes have continuously evolved in response to an ever-changing multicultural society (McCann James, 2013) with diverse social issues, such as youth offending (Campbell, 2005; Tovey & Share, 2003), family issues (Feeney, 2014; Róiste, 2006), abuse (Halpenny, 2012), homelessness (Kasting & Artz, 2005; Seymour, 2013), addiction (Doyle, 2009), domestic violence (Charles, McElwee, & McKenna-McElwee, 2005) and care of those with disabilities (Finnerty, 2005), influenced and directed by inquiries, political actions, policy and the law.

Social-care education puts emphasis on learning in practice placements (Byrne-Lancaster, 2014; McSweeney & Williams, 2019), on language (Clarke Orohoe, 2014) in relationships (Behan, 2014; Fish & Morgan, 2021) and the use of self (Lyons, 2013; Mulville, 2014), with others as best practice (Garfat, McElwee, & Charles, 2005; Ruch, 2000); and rather than fixing others (Mooney, 2014), it supports empowerment (McCann James, Róiste, & McHugh, 2009b) and independence (D'Arcy, 2014) from a rights-based perspective (McCann James, Róiste, & McHugh, 2009a). SC work, for example, involves working in and managing teams (Leonard, 2014; Molloy, 2014) to ethically care (Charleton, 2007) for clients who deploy challenging behaviour

(Fizmaurice, 2009; O'Sullivan, 2014; Walsh, 2014) and self-harm (Williams, 2014), often in residential settings (King, 2014; Reynolds, 2014). SC workers require ongoing professional supervision (Doyle, 2014; McSweeney, 2017; O'Neill, 2013) to establish and maintain boundaries, confidentiality and non-judgemental practice (McCann James, Roiste, McHugh, Róiste, & McHugh, 2009).

As social-care concepts continuously evolve, teaching threshold concepts in this domain require a flexible and inclusive pedagogical and relational approach that recognises self and others. 'Threshold graphics' is such an approach to threshold concepts, focused on conceptual development through learning, community exchange and efforts rooted in personal, embodied experiences (Lacković, 2020a, p.145), which are highly relevant in social care. Redefinitions and reframing concepts can then connect more and better with the sensory and environmental situatedness of caring in practice.

2.3 Threshold Concept Theory and Approach

Threshold concept (TCs) framework research encompasses many multidisciplinary domains (Meyer & Land, 2006a; Meyer, Land, & Davies, 2008) and continues to develop and evolve (See website Flanagan, 2019). Its broad appeal lies in the potential and utility of making known which conceptual knowledge students find 'troublesome' (Perkins, 2006), leading to 'transformative' learning and contributing to resolving educational issues such as the evaluation of curriculum design and teaching and learning support. In addition, TC research can develop and integrate other bodies of knowledge, creating new synthesises (Barradell & Peseta, 2017). However, their value has been questioned (Brown, Whybrow, & Finn, 2021; O'Donnell, 2010; Salwén, 2021), such as the possibility of empirical isolation (Rowbottom, 2007) and issues differentiating between agreed 'core' and threshold concepts (Barradell, 2013).

Whereas key or core concepts provide basic knowledge units within disciplines and professions, Meyer and Land (2010) argue that threshold concepts (TCs) differ. Encounters with 'troublesome' (Perkins, 2006) conceptual knowledge or TCs provide crossing points or portals, leading to genuine understanding and transformation. Successful crossings result in changes in discursive interactions, cognition and

behaving, conforming to the norms of the profession or discipline, instilling authentic mastery (Meyer & Land, 2003a, 2005) and identity formation (Barradell & Peseta, 2017; Clouder, 2013). TCs are understood to have seven defining characteristics. These are: (1) transformative, (2) troublesome, (3) irreversibility (unlikely to be unlearned), (4) integrative (with other knowledge structures), (5) possibly bounded (occupying a conceptual space), (6) reconstitutive (change in subjectivity over time) and (7) discursive change (adopted as a change in discourse) (Meyer & Land, 2003a, 2005; Smith, 2006). All characteristics, except troublesome and liminality, describe the outcome of acquisition rather than the student's actual learning experience (Schwartzman, 2010). It is also worth noting Shanahan et al.'s (2008) accretion that a single TC may not possess all the characteristics or affect all learners in the same way.

Liminality, influenced by Turner (1989) and Gennep (1960), is described by Meyer et al. (2010) as a 'suspended state of partial understanding', an uncomfortable and 'stuck' (Meyer et al., 2010, pp.4) place, that can manifest a type of mimicry before further knowledge development. Significant transformative learning is not without effort, destabilisation and discomfort (Land, Cousin, Meyer, & Davies, 2005). While comprehending 'alien' concepts, learners can endure uncertainty within a liminal space to pass through the 'portal'. Whereas Meyer & Land (2006a) identify TC by its characteristics, Davies et al. (2010) propose three types of conceptual change: basic, discipline threshold and procedural.

It was never Meyer & Land's (2003a) intention to establish fixed and stable criteria setting out what students should or would experience. According to Baillie et al. (2013), it is open to development and interpretation, as the characteristics of TCs 'will be experienced in varying degrees by students because of individual differences in, for example, but not limited to, individual levels of prior or tacit knowledge, and predispositions to think about phenomena in a particular way' (Baillie et al., 2013, p.246). In addition, Baillie et al. (2013) proposed a new idea called 'threshold capabilities', building on capacity theory.

Land et al. (2014) define liminality as a space 'in which there is a reformulation of the learner's meaning frame and an accompanying shift in the learner's ontology or

subjectivity' (Land et al., 2014, p.199). Liminal spaces are where troublesomeness and being 'stuck' lead to transformation. Meyer et al. (2008) developed this further by proposing three stages of liminality: pre-liminal, liminal and post-liminal. Where uncertainty is involved, there is a risk of experiencing affective discomfort in constructing and accommodating new knowledge (Land, Meyer, & Flanagan, 2016b). Peirce's abductive reasoning, a staple of his semiotic approach, helps us to think about how learners enter this partial liminal state. Abductive reasoning relies on inferences or interpretations based on observation and experience. It permits leaps or best guesses, leading to discovery, and it is the first step out of certainty (Campbell, 2018). Genuine doubt (Peirce, 1974), according to Cunningham (1992), arises from surprising experiences external to oneself within a pertinent context. For the learner, genuine doubt occurs when confronted with anomalies at odds with their constructed reality. Through an abductive process, beliefs or habits of mind destabilise and are re-evaluated. All this can provoke discomfort by opening up many possibilities and revealing many truths. For novice learners, particularly those without professional experience, the direct relationship between concepts and practices is outside their meaning frame. Partial or pre-liminality is entered when learners 'hold' concepts in mind until a full resolution is found in professional experience at a future point, post-liminality. According to Meyer et al. (2006b), transformation within all stages of liminality may take time and fluctuate with regression to earlier states or forms of mimicry. 'Compensatory mimicry', according to Meyer et al. (2006b), appeases the student's sense of knowing when it may be irrelevant, and 'conscious mimicry' (Meyer & Land, 2006b, p.24) is when the student is aware of a knowledge gap and yet deploys mimicry.

Meyer et al. (2012) refer to Perkin's (1999) forms of troublesome knowledge. They include routine and meaningless ritual knowledge, inert knowledge that does not integrate or connect to everyday reality or is inseparable from 'everydayness' (Shinner-Kennedy, 2008, p.122), conceptually difficult knowledge and alien knowledge that is inconsistent with one's perspective. However, Ross et al. (2010) and Barradell (2013) argue that conceptually challenging troublesomeness may not always indicate a TC. Tacit knowledge (Polanyi, 1962), according to Perkins (1999), is related to complexity,

inconsistency and subtle distinctions between knowledge, with Meyer et al. (2012) adding that tacit knowledge remains implicit, personal and practical, often within communities of practice (Wenger, 1998). Tacit knowledge may become apparent when confronted with opposing or conflicting concepts that assist the learner in seeing their tacit knowledge in a new light (Meyer & Land, 2012). Language arising from discipline discourse can be troublesome, yet it helps to differentiate between communities of practice. Familiar words for concepts, perhaps in common everyday use, may become alien or difficult as they require re-signification to fit the purposes of the discipline.

Meyer & Land (2006a) provide a metaphor for TCs, portraying them as crossing points or 'portals' leading to enlightened availability and the integration of new knowledge perspectives. This is a specific visual metaphor, which, I think, only reinforces the idea that concepts can be better or more fully understood through images (Lackovic, 2020a). However, this state of being in a portal may not be easily captured in data collection or be evident to those teaching in the discipline. Critics such as Rowbottom (2007) question the possibility of empirical isolation and ask if threshold concepts are collective or individual entities. The semiotic ideas of inquiry graphics that inform threshold graphics are helpful in this respect, as this approach suggests that concept development is both individual and collective through collective exploration, and contribution building on individual interpretations. Barradell (2013) also points to a differentiation issue between agreed 'core' and threshold concepts among discipline stakeholders and vagueness surrounding defining qualities across the aforementioned characteristics. Taking account of these concerns, TCs are understood more succinctly as part of an episteme (Baillie et al., 2013; Meyer, 2016; Perkins, 2006) or a system of interlocking threshold concepts expanding over a non-linear learning journey with multiple 'liminal spaces' (Land et al., 2014), arriving at a point of irreversibility. A TC's worth also lies in its adaptability, permitting pliant modification. According to Cousin (2008), threshold concept theory shares gestalt perspectives by grasping that 'the whole allows the learner to see the constituent parts' (Cousin, 2008, p.261) and aspects of Mezirow's (1990a) 'perspective transformation' (Mezirow, 1990a, p.220) through 'disorientating dilemmas' (Mezirow, 1990a, p.222), although the focus is on

the ‘rational and analytic nature of critical reflection’ (Land & Meyer, 2010, p.xii), rather than affective dimensions.

Conflict arises, as Mezirow (1991) states, when there is a ‘dilemma pertaining to our view of ourselves’ (Mezirow, 1991, p.28) and a gap between what is currently known and what needs to be understood. Troublesome knowledge, then, according to Schwartzman (2010), ‘denotes an anomaly that cannot be avoided, ignored, or made to conform, leading to a rupture in knowing’ (Schwartzman, 2010, p.33). Stopford (2021), with reference to Wittgenstein, points to student difficulties arising when existential ‘*certainties clash* with discipline-specific conceptual content’ (Stopford, 2021, p.165, emphasis in original). This shortfall brings the meaning frame into view, causing discomfort (Schwartzman, 2010). Critical reflection upon these ‘disorientating dilemmas’ (Mezirow, 1990a) can also shatter complacency and offer insights (Schwartzman, 2010). Difficulties do not lie within the concept itself per se, as pointed out by Stopford (2021), but how the learner’s emotional and/or cognitive certainties are challenged and Stopford rightly points to shifting the emphasis away from the concepts themselves to a ‘phenomenon about *students*’ (Stopford, 2021, p.166, emphasis in original). TCs are, then, identifiable by looking ‘at the complex mediations of individual student experience, [and] socio-cultural background, alongside disciplinary content’ (Stopford, 2021, p.168). These arguments align with Blunden’s (2012) contribution to conceptual theory, discussed later, as social formations embodied with past practices and language with agreed meanings within disciplines. Concepts are, therefore, continuously remade as relational entities, and troublesomeness arises from these encounters.

Teaching from these perspectives involves introducing ‘trigger events’ (Ricketts, 2010, p.53) to provoke a critical response. Therefore, I argue that using inquiry graphics with photographs as threshold graphics can reveal systemic, hidden and opaque structures, opening up debate, examination and critique.

2.3.1 What is a Concept?

Having outlined TC theory in the previous section, I now briefly address the ‘What is a concept?’ question, as this underpins assumptions in TC theory, although it does not

feature prominently (Mead & Gray, 2010). However, answering this question is difficult as it can involve many disciplines, including cognitive science and philosophy; nonetheless, a brief overview of my position on concepts in the thesis will offer some parameters for clarity of focus. I adopt the view on concepts of Blunden (2012), because his work aligns with the idea of concepts as developmental, fluid, socioculturally constructed and non-finite entities, which I think also aligns with some of the ambitions of educational semiotics discussed later.

According to Blunden (2012), various contributing disciplines have offered valuable insights, although their separation presents an obstacle to a coherent approach. Of particular interest here is how concepts have come to be seen as products separate from process. Blunden defines a *concept* as a process rather than a thing, and 'a thought from which constitutes a unit of knowledge of the world' (Blunden, 2012, p.3). Blunden critiques contemporary concept theory by first opposing the idea that concepts are mental representations in the mind, narrowly dealt with by a 'process of pigeonholing'; and second, that the 'objective world is atomistic, being composed of individual entities' (Blunden, 2012, p.14).

Concepts are 'forms of social life' according to Blunden (2012), as 'all human interactions involve language and concepts which are cultural and historical products already existing prior to any particular interaction' (Blunden, 2012, p.8). For Blunden (2012), concepts are embodied and bring forth meaning originating in the practices and language of the past and, in doing so, oppose dualism, proposing concepts as units of 'both consciousness and the social formation' (Blunden, 2012, p.9). This position aligns with how the IG semiotic approach can reveal historical concepts, such as disability or race, that are fluid and in constant formation when contrasted with the present.

Concepts also resist categorisation into types but emerge from a social formation process, and getting the 'essence' of the concept involves some 'combination of attributes which are deemed core or non-core' (Blunden, 2012, p.21). Categorisation, then, as a way to see concepts, comes to nothing as it is 'stripped of its contingent attributes' (Blunden, 2012, p.83). Blunden (2012), however, notes the limited

objectivity of the concept's content as, 'insofar as concepts reflect the material world, they will be inconsistent, unstable and contradictory' (Blunden, 2012, p.19), and that is what happens with concepts – they have life and effect in the world. However, Mead et al. (2010) argue that concepts in disciplines distinguish between private and public conceptions, with public concepts being more stable due to shared negotiation with others. Disciplinary concepts and definitions fit this collective agreement protocol showcased in textbooks and scholarly articles. These are less likely to be rapidly altered or changed, according to Mead et al. (2010). The learning work of disciplinary education is to evolve and align personal concepts with those of importance within the discipline (Mead & Gray, 2010). Mead et al. (2010) draw attention to the contract between the personal, more unpredictable space and the more rigid space within disciplines.

Blunden's and Mead's views align with the inquiry graphics approach, suggesting that concepts hold or embody rich fragments from cultural and social practices (Lacković, 2020a). Hence it makes sense to attempt to locate and critically interrogate these in the visual world as manifestations of such practices, thereby challenging assumptions and constructing knowledge that stretches beyond the self and abstractions into the material world, such as that represented in photographs.

Pictorial signs can embody both subjective and objective meanings. The inquiry graphics framework (IGF) can bridge the gap between substance or the essence present in the materiality that an abstract concept or theory needs to be realised, and those very abstract concepts and theories have some effect on or work in the real world (Lacković, 2020b). The IG framework, as briefly introduced at the beginning and discussed in detail further on in section 2, offers a holistic and unifying, albeit challenging, approach to the critical mediation of often separate entities of theory or concept, and practice and sensory world experiences (included emotions), in teaching in higher education. The objective-subjective and abstract-concrete components of concepts are, after all, two sides of the same coin and require exploration. The point is that abstract concepts, such as many concepts in social care (abuse, care, neglect, economic hardship, etc.), can only be developed more fully (from an initial verbal introduction) concerning real-world experiences and embodied examples, material or

sensory. In agreement, Semstsky (2007b) states, regarding Deleuze's metaphor of the rhizome, that 'the creation of concepts is a function of experience and is inseparable from affects and percepts' (Semetsky, 2007b, p.197).

2.3.2 Pedagogies Applied to Teach and Learn Threshold Concepts

This section reviews the threshold concept literature and identifies the pedagogies applied to teach and learn threshold concepts. Threshold concepts can be troublesome or counterintuitive for some learners, though not all (Steckley, 2020a), due to their abstract nature that impacts on the self and alters world views. As Gibbs (2005) states, 'learning enables you to perceive the world differently. Everything changes ... you have become a different person' (Gibbs, 2005, p.23). Therefore teaching involves helping the learner to become a stranger to themself (Bayne, 2008; Kristeva, 1991; Land & Meyer, 2010; Wilson, 2004) and their reality. Educators play a crucial role in helping students shift and refine these meaning frames (Schwartzman, 2010), guiding them through extremely challenging material that leads to threshold learning. However, according to Schwartzman (2010), nothing in the characteristics of TCs offers any insights into how they can be taught. Indeed this research puts a timely focus on how an IG pedagogical approach can support critical reflective engagement with TCs.

It is argued that the objective of professional and disciplined education is to teach students to 'think like a ...' (Meyer & Land, 2012, p.23), computer scientist (Rountree, Robins, & Rountree, 2013), an occupational therapist (Springfield, Rodger, & Gustafsson, 2017), an economist (O'Donnell, 2010) or social-care worker, for example. This approach involves fostering identity formation (Davies, 2006), participating in communities of practice (Wenger, 1998) and engaging in 'thought collectives' (Fleck et al., 1979, p.x). Although forging new identities is complex, McCormick (2008) points out that it fosters student ownership and integrative learning. Learners then join a community of people who share a particular point of view, common practices, terminology/ language and ways of thinking (Belknap, Becker, Geer, Hughes, & Strauss, 1977; Davies, 2006). Conceptual learning, and indeed TCs, is central to achieving this. For this reason, getting students 'to think' (Meyer & Land, 2006b, p.20) and using tricky discipline-specific language or 'jargon' (Shanahan & Meyer, 2006) is critical in TC teaching. Several strategies are deployed, such as Lather (1998) proposing 'thinking

otherwise' and Meyer et al. (2005) '.a counter-narrative' (Meyer & Land, 2005, p.60) to push beyond the comfortable and into alternative ways of thinking.

I identified several teaching strategies or pedagogies in the TCs literature. Examples include role modelling (Steckley, 2020a), scaffolding learning opportunities (Meyer & Land, 2012), building up 'layers of complexity' (Taylor, 2006, p.89) and helping learners to 'recognise explicitly what is currently left tacit' (Davies, 2006, p.82), and after grasping 'declarative knowledge' helping with its integration (Davies, 2006, p.76). Also, deconstruction (Cousin, 2006b) and construction using Socratic self-reflective and critical questioning (Booth, 2006), problem-based learning (Savin-Baden, 2006) and a theory-first approach sequencing definition, discussion, graphs, formulas and examples, applied to an essay (Reimann & Jackson, 2006). Few studies have identified visual use as a TC teaching strategy, apart from Sibbett (2008), who proposed using arts-based liminal experiences to help students with transitions and identity issues within professional healthcare programmes. I argue that IG pedagogy, such as threshold graphics (TG), can be used for problem-based learning, examining practices, revealing, deconstructing and scaffolding tacit knowledge that leads to critical questioning and reflection.

Linking to practical examples in the real world (Carstensen & Bernhard, 2016; Reimann & Jackson, 2006) was found to be a crucial strategy for teaching TCs (Land, Cousin, Meyer, & Davies, 2006) to overcome negative perceptions and foster relevance (Moeller & Fawns, 2018) and ownership (Taylor, 2006). Linking involves connecting to 'isolated islands of knowledge' (Taylor, 2006, p.92) or, as Dewey (1929) states, creating connections that bind 'isolated items into a coherent single whole' (Dewey, 1929, p.80). This approach, then, reduces the risk of disengagement (Quinnell & Thompson, 2010) by building up complex layers of composite knowledge (Taylor, 2006) and supporting students to see the underlying interaction of concepts in the episteme (Perkins, 2006) or 'game' (Land et al., 2006, p.29). IG visual pedagogy aligns with this linking strategy by actively engaging the learner in the real world by naming, identifying, connecting and integrating signs in photographs for learning.

However, linking to common-sense knowledge and everyday experience has its drawbacks and can be a barrier (Steckley, 2020a). According to Land et al. (2014), some evidence suggests that linking to students' often limited everyday experiences, a common pedagogy, may facilitate false understanding. However, without experience of the concept in the field, miscomprehension is more likely, thwarting or delaying the successful acquisition of some troublesome concepts (Land et al., 2014). Land et al. (2014), aligning with Mead's (2010) proposed public and private concepts discussed earlier, suggest distinguishing between 'authorised' or endorsed by the discipline and 'alternative' or everyday understandings (Land et al., 2014). Again, IG pedagogy can identify misconceptions, an issue Ross et al. (2010) pointed out with threshold concepts, by observing what signs and meaning the learner uses from their visual world to represent concepts.

As discussed above and as Savin-Baden (2008) contends, all learning is 'necessarily biographical and contextually related' (Savin-Baden, 2008, p.80), and indeed, as stated by Land et al. (2006), TCs not only involve a cognitive shift but a 'repositioning of the self' (Land et al., 2006, p.200). For some TCs, the focus on the self might be more pronounced as learners operationalise relational practice, internalisation and embodied learning to work *on* and draw *from* the self (Smith, 2005; Steckley, 2020a). This approach may come at a 'cost' (Atherton, 2013) by challenging the learner's certainty, igniting a sense of grief (Boyd & Gordon Myers, 1988) and loss (Land et al., 2006), for what was certain and known a short time ago has now gone. It can bring new awareness of social standing, shed theoretical light on current or past experiences and highlight gaps in understanding the reality experienced by others (Foote, 2013). An ''experiential proximity'' (2006b, p.138) via their emotional capital, as Cousin (2006b) states, refers to the learner's closeness to the TC and proposes that all students have some experience to draw from reducing defensive responses. However, focusing on the self can arouse strong emotions, create resistance (Ricketts, 2010) and 'trigger' (Brookfield, 1991; Mezirow, 1990b, 1997) a range of psychological defences. Steckley (2020a) offers an insight into the hazards of teaching TCs that expose human failings and perhaps unspeakable traumas. For example, students may respond strongly to abuse and neglect, as they 'can bewilder or agitate, triggering intense and difficult

emotions' (Steckley, 2020a, p.2). This troublesomeness rests on how students respond, either with inadequacy due to common sense or in a counterproductive, damaging way. Although not all students will share their experiences in the classroom, Cousin (2006b) suggests a sensitivity to the 'defences of the defended learner' (Cousin, 2006b, p.142) and those who have abundant emotional capital. According to Cousin (2006b), the' victim-identified learner' uses their experience to strongly identify with oppressed groups (Cousin, 2006b, p.142). '"Great honesty"' was identified by Steckley (2020a) as a quality students need to break habits and engage in threshold learning, resulting in changes to the self (Steckley, 2020a, p.7). Rattray (2016) then promotes the idea of attachment and attuning to the learner's affective state to foster resilience and negate low self-efficacy, leading to low persistence (Schunk, 1991).

Where emotional affect is welcome, educators are challenged to respect and balance emerging personal stories while at the same time prompting ongoing academic pursuit (Cousin, 2006b), a more arduous and tiresome task (Cowart, 2010). There can be numerous responses. For some learners, new knowledge can be intimidating (Moeller & Fawns, 2018), while others display defensive and conflict behaviour as it challenges their 'everyday intuitions' (Booth, 2006, p.176). Kegan's (1982) constructive-development theory, according to Timmermans (2010), points to a need to balance cognition and affect, with the latter often overlooked or disregarded. Applied threshold-concept theory recognises the role of both and seeks destabilisation through deliberate teaching acts, with the eventual aim of reinstating an altered yet tightly tensioned balance or dynamic equilibrium (Kegan, 1982; Timmermans, 2010). Felten (2016) recognised the intertwinement of cognitive knowledge and affect and called for further exploration of 'troublesome affect' (Felten, 2016, p.5). Based on this, thresholds will not be crossed without strong individual agency and teaching support (Rattray, 2016). Aligning with this stance, IG supports and recognises the inescapable intertwinement of the cognitive and the affective that often accompany troublesome concepts and welcomes active, reflective exploration through visuality.

The educator's role, not often considered, permits 'provisional stability' (Bonamy, Charlier, & Saunders, 2001, p.295) to encourage critical reflection and questioning, which is necessary to integrate TCs in particular (Land et al., 2006; Moffat & McKim,

2016), by providing a safe holding environment (Winnicott, 1971). As Dewey (1933) asserts, 'the path of least resistance and least trouble is a mental rut already made. It requires troublesome work to undertake the alteration of old beliefs' (Dewey, 1933, p.30).

Overcoming mental habits requires being self-aware and critical. The ability of students to tolerate, as described by Barnett (2007), 'new places, strange places, anxiety-provoking places' (Barnett, 2007, p.147) is required. The process of learning TCs tests the student's ability to tolerate uncertainty, and perhaps forewarning of the normalcy of this difficulty can encourage students to ''hang in there'' (Land et al., 2006, p.201). The advantage of the IG pedagogy proposed is that it can bring troublesomeness into focus by destabilising what is known about reality, thereby revealing hidden aspects of the cognitive and affective self for further exploration through critical reflection. For example, Sibbett et al. (2008) point to the danger of unexplored intentions in care work, such as rescuing and helping others based on power.

2.3.3 Threshold Concepts in the Social and Healthcare Professions

As stated earlier, TC research is still developing in health, social work, nursing, social care and child and youth care. The following section offers an overview of the available TC literature.

There are several TCs identified within the social and healthcare professions. These include caring (Clouder, 2005b), decision-making (Leonard & O'Connor, 2018), social model of disability (Morgan, 2012; Reeve, 2012), interprofessional (Howden, 2018), critical reflection (Foote, 2013) and relational practice, and use of the self, developmental care, containment and life-space (Steckley, 2001, 2020a). In nursing, then, the proposed TCs include social justice, person-centred care and patient safety (Levett-Jones, Bowen, & Morris, 2015), stress, self-care management and empathy (Donovan, McCarthy, & Trace, 2013), boundary transgression, dehumanisation, adversity, the burden of care, the "Other" and stigma in mental health (McAllister, Lasater, Stone, & Levett-Jones, 2015).

Martindale et al. (2016), in nursing education, recounts students' difficulty with limited time and three categories of troublesomeness. Troublesome knowledge may be innate to the subject, such as research discourse and relevance. Troublesome selves were 'internal to the student's set of beliefs, attitudes and perceptions', such as general negativity. Troublesome environments were 'external to the student but related to the places where they learn' (Martindale et al., 2016, p.242), such as clinical placement reporting a disparity between theory in class and what happens on the ground. Martindale et al. (2016) also question the credibility of university teaching staff not being in clinical practice.

Several TCs were identified from the occupational therapy and physical therapy literature. Although the TCs outlined here do not originate from SC, they highlight troublesomeness, roles, beliefs, relationships, thinking critically and reflectively and the use of self in the care of others and the conceptual skills that could apply to teaching and learning any of the healthcare professions. Both Tanner (2011) and Rodger et al. (2011) identified a client-centred approach and developing a professional self-identity, with Rodger et al. (2011) proposing purposeful and meaningful occupation, the integral nature of theory and practice, and thinking critically, reasoning and reflecting. Nicola-Richmond et al. (2018) also suggest practising in a context as reflective practice, a holistic approach and 'negotiating the gap between theory and practice, understanding funding systems, managing the differences in social and medical models, negotiating service systems, and fitting service provision around economic constraints' (Richmond et al., 2018, p.5). Physical therapists have identified the non-judgemental role (Johansson, 2014). 'Othering' (DeBeauvoir, 2011) or social difference was identified by Cousin (2006b) as a TC from cultural studies and by Kempenaar (2018) in healthcare education.

2.4 From Inquiry Graphics (IG) to Threshold Graphics (TG)

2.4.1 What Are Inquiry Graphics?

Inquiry graphics (IG), as stated in the introduction, is a new educational approach with four possible applications that applies visual media (graphics) in conceptual learning across disciplines. This is done based on Pearce's triadic sign model and, therefore, four key phases of inquiry, following the earlier introduced model. IG can be applied:

1. As a theoretical approach to learning concepts
2. As a critical visual tool in teaching
3. As a visual inquiry research method combined with photo-elicitation
4. As a guide for a critical visual analysis when applied in research (or teaching, as above).

I outline each application, in turn in the following sections.

2.4.2 Inquiry Graphics as a Theoretical Approach in Higher Education

Lacković's (2020a) inquiry graphics theory of learning is informed by semiotics and edusemiotics, given its application in education. It argues that abstract concepts need visual or sensory grounding to help students understand them better and relate them to everyday experiences and prior knowledge. In that respect, it is similar to Dewey's experiential learning. Inquiry graphics are graphics (e.g. pictorial images such as photographs, illustrations, videos) that are inquired (analysed, reflected on, critiqued) in relation to any disciplinary or research concept that they are brought into connection with in order to advance the knowledge primarily about the concept, but also the graphic. IG theory offers a theory and a method in this study to investigate how troublesome conceptual knowledge can be represented, analysed and interpreted via signs with photographs.

To begin with the origins of semiotics, Charles Sanders Peirce (1839–1914) was one of the founding fathers of modern semiotics, along with Ferdinand de Saussure (1857–1913). Other notable contributors include Umberto Eco (1932–2016) for his theory of semiotics (1976) and Thomas A. Sebeok (1920–2001), who developed semiotics and communication theory. It is worth noting Stables' (2012) assertion that philosophers lean towards Peirce, who was a philosopher, rather than Saussure, who was a linguist. In general, semiotic philosophy has a marginal status in higher education studies, and many scholars build on structuralist semiotics, such as that of Roland Barthes. According to Stables (2006), semiotics is about 'the study of human culture and interaction' (Stables, 2006, p.374) and, according to Danesi (2009), it is 'ultimately a form of inquiry into how humans shape raw sensory information into knowledge-based categories through sign-interpretation and sign-creation' (Danesi, 2009, p.ix).

Peirce (1974) defined a sign, which is a central interaction and communication unit according to semiotics, as ‘something which stands to somebody for something in some respect or capacity’ (Peirce, 1974 CP 2.228), and semiosis is the process involved in meaning-making from signs. These can be symbols, images, facial expressions, non-verbal communication, body reactions and the use of tools. From a theoretical perspective, IG builds on Peirce’s semiotic theory, which is the study of signs and Barthes’s interpretative deconstruction (1983) on how signs can be theorised and how meaning is made within society. Although Barthes (1977a) was influenced by Saussure's structural linguistics (Unger, 2004) and is rarely linked to Peirce’s semiotics, his connotation and denotation are usefully applied for analysis in inquiry graphics to provide a practical translation of pictorial sign structure, such as photographs, into an analytical approach. Danesi (2019) helpfully defined *denotation* as the ‘initial referential domain of the sign’ and connotation as ‘the extended senses attached to it’ (Danesi, 2019, p.69), which is also reflected in IG’s adoption of denotation and connotation as part of an analytical Interpretant.

Peirce’s triadic structure (Peirce, 1974) (see Fig. 2) underpins IG theory; and here, I offer a theoretical overview adapted from Merrell (2021) and Lacković (2020b). Peirce divided consciousness or experience into the triadic sign model of representamen (firstness), object (secondness) and interpretant (thirdness) (Cobley, 2010b).

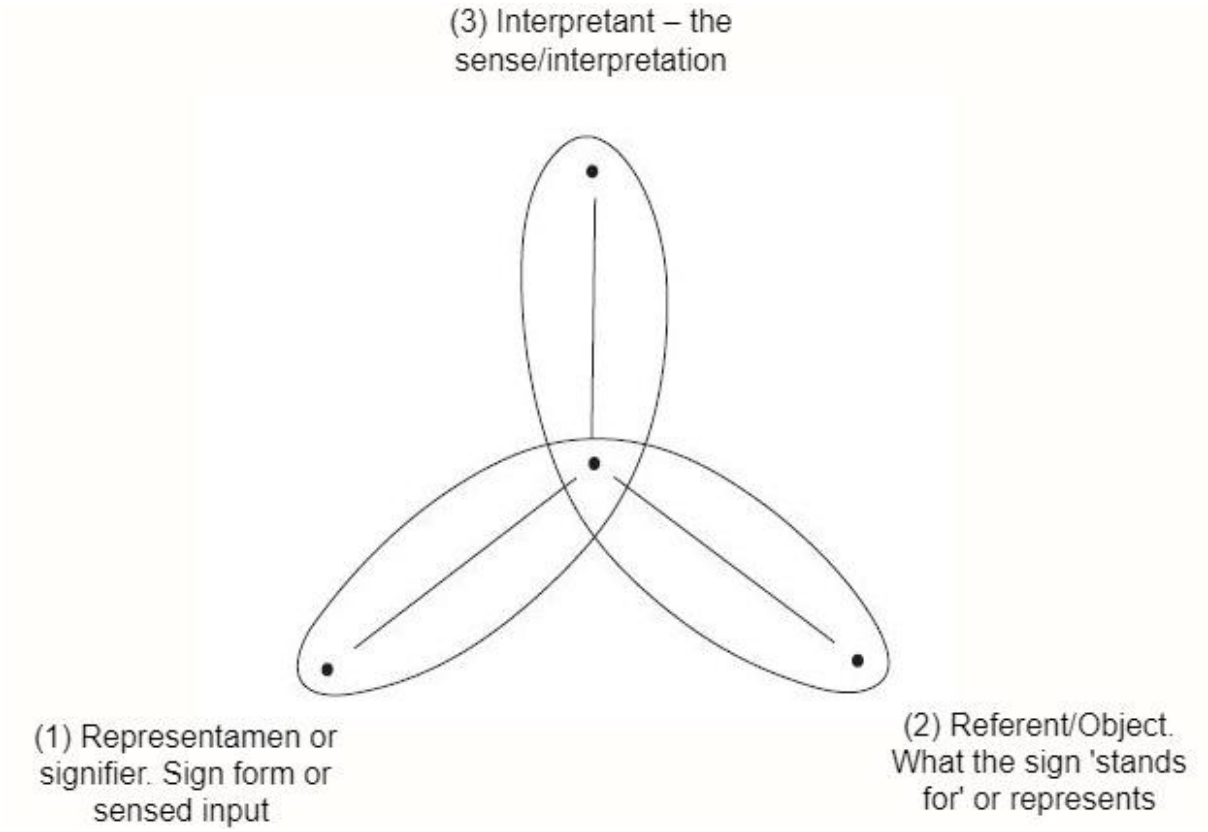

Figure 2: Diagram of the Peircean triadic sign adapted from Merrell (2021) and Lacković (2020b)

Houser (2010) described Pierce's logic as having three division levels. The first division focuses on the sign. The second is constructed on the results of the first with reference to signs to objects. The third builds on the outcomes of the previous divisions with a focus on interpretation or effects. Further, firstness can be the quality of feeling or sensation, or a state of being separate from objective perception or thought. Secondness is brute facts and is related to reality or existence to objects in several ways, either by relation, effect or dependence. Thirdness mediates the relationship between firstness and secondness and corresponds to intellectual experience, interpretation or mental elements from cultural socialisation, which is a staple of educational communication.

Signs are then entities or units used for meaning-making and communication as the crucial tenant of learning. According to Lacković's (2020a) interpretation of Peirce's triadic sign meaning-making, creating meaning from signs involves 'some sensation or sign form/ vehicle; the mind that interprets it; and the physically or virtually existent

object that the sign vehicle expresses, and the minds interpret' (Lacković, 2020a, p.7). The IG framework uses a semiotic icon-symbol-index hybrid typology of signs as a tool for unpacking signs within images. To briefly explain, the *icon* represents a physical similarity between the sign form and its object (e.g. the Twitter icon resembles a bird or a photograph – every photograph has iconic qualities); the *symbol* is understood based on the conventional relationship between the form and its meaning – the meaning is agreed (which means that an inquiry graphic photograph with assigned conceptual meaning becomes a symbol of that concept, as well as its icon and index). An *index* can be understood as an indication of something else, the form of an index has an existential connection to the sign; in simple terms, it implies or indicates something else (such as smoke is an indication of fire/ combustion). Photographs from this semiotic perspective are 'compound icon-index-symbol signs' when used as inquiry graphics (Lacković, 2020a, p.46), but also in general communication in the media and learning, explained further here.

Inquiry graphics, which brings together photographs and concepts in disciplines, is a complex compound sign (see the IG model in Fig. 3). **R** is representamen standing for 'the embodied form of the picture that is chosen to represent a concept' (Lacković, 2020a, pp.67-68). **I** (Interpretant) represents interpretation at the intersection of picture interpretations (**PI**) and concept interpretations (**CI**) coming together for elaboration 'by critical interpretation of the **CI-PI** relationship' (ibid., p.67). **PI** is explained as describing any elements (what is represented) within an image and their meanings. **CI** adds to that 'an extra conceptual meaning', such as abstract concepts, ideas and theories resulting in 'critical inference thinking' as a critical concept interpretant or **CCI** (ibid., pp.67–68). Inquiry graphics connect picture content interpretations and the conceptual and theoretical content of the curriculum through critical inquiry of both, exploring what is known and uncovering new meanings about the concept in question.

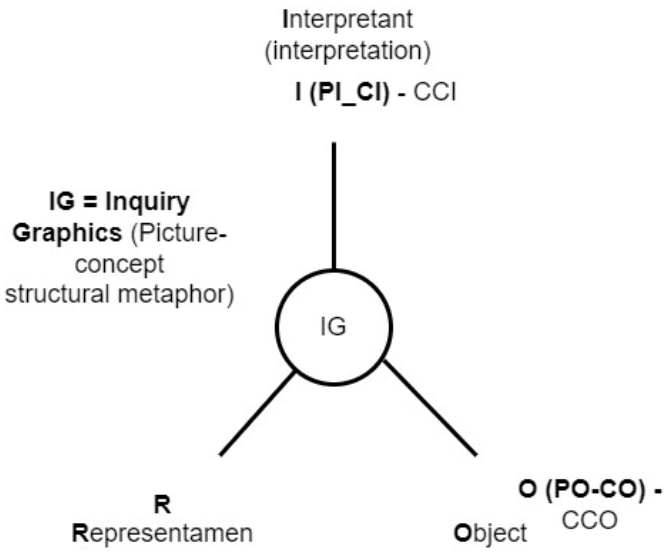

Figure 3: IG = Inquiry Graphics

The object (**O**) is elaborated on with **PO** meaning with 'picture/ image/ pictorial Object (what the picture embodied form refers to)' (ibid., pp.67–68), and **CO** meaning conceptual (assigned, integrated) object, 'what the picture is chosen to refer to for targeted communication and/or learning purposes'. This results in **CCO** as the 'Critical Concept Object (what is critically known about the concept and the potential and character of the whole sign to be inquired critically)' (ibid., pp.67–68).

Edusemiotics, where IG finds influences, brings semiotics and education together (Deely and Semetsky, 2017), viewing learning as a dynamic sign-interacting process of 'becoming and learning to become' (Stables & Semetsky, 2015, p.1). Where teaching and learning theories may have traditionally looked to psychology for assistance, edusemiotics offered a philosophical look at epistemology, ontology and ethics (Deely & Semetsky, 2017). Having originated from seeking to understand purely linguistic processes, it now includes images or 'anything that potentially signifies' meaning (Semetsky & Stables, 2014, p.1).

Edusemiotics views living and learning as an ongoing process of 'semiotic engagement' (Stables, 2006, p.373), and at a human level, we are all born into sign-use, creation and interpretation. As Kress (2008) suggests, 'semiosis' and 'learning' are the same but, nevertheless, seen from different epistemological and practical viewpoints. Kress (2008) describes 'learning' as focusing on the learner's modification of their resources and internal philosophies, with 'semiosis' focusing on the impact of the learner's inner

changes on the world. The world is, then, continuously re-made by semiosis based on the learner's agency and meaning-making processes. Framed in this way, edusemiotics and IG theory propose learning as developing 'semiotic consciousness and semiotic competence' (Deely & Semetsky, 2017, p.207).

According to Kress (2008), learning is a continuous process in response to our environment and has a transformative effect on learners' conceptual resources, their environment, on the philosophies the learner has applied. Education operates within a meaning-making context and, therefore, uses sign systems and recognises 'things' that function as possible signs (Stables & Semetsky, 2015). Learning can be viewed as signs emerging from a dynamic, never-ending semiotic process, rather than a stable arrival point. Using IG theory in education aligns with these views as Lacković (2020a) proposes that the aim 'is to introduce new signs and sign systems to embed those in the minds and environments of learners in ways that facilitate the development of more complex systems' (Lacković, 2020a, p.60). IG also extends edusemiotic's ''bodymind'', holistic philosophy of education (Deely & Semetsky, 2017) by actioning images as semiotic resources. Campbell et al. (2019) define *semiotic resources* as 'something that can be used to represent; that can be engaged with semiotically and, as such, leads to the generation (or discovery) of (more) meaning' (Campbell et al., 2019, p.358).

From a biosemiotics perspective, the 'Umwelt' is another aspect of semiotics I will bring attention to here as it relates to how people scaffold (Vygotsky, 1986; Wood et al., 1976) or '*make* the world' (Kull, 2010, p.46, italics in original). von Uexküll's (2010) concept of *Umwelt* proposes that all species construct their world or reality from their signs, depending upon their sign-making and assimilation abilities (Cobley, 2010). Sebeok (1985) proclaimed that semiotics' primary mission is to 'reveal the substratal illusion underlying reality and to search for the reality that may, after all, lurk behind that illusion' (1985, p.21). Similarly, Lotman (1990) proposed the semiosphere, linked to the biosphere, as a system of semiotic regulation. IG, an educational theory with images, taps into each person's *Umwelt,* bringing 'substratal illusion' (Sebeok, 1986, pp.77–78) into consciousness.

2.4.3 Why Apply Visuals in Teaching and Learning?

As this research evaluates the potential of IG as a critical visual tool, in this section, I will briefly outline how images operate in visual culture, the 'reading' of images, the subordination of visuals in education, multimodality, multiliteracies, visual literacy and the IG framework.

Our modern lives have increasingly become saturated with images, and for many, it is their primary interaction with the world (Rose, 2016). We are, according to Debord (1983), part of 'society as a spectacle' and, for Simpson (1994), held within 'the vision machine' (Simpson, 1994, p.75). Indeed Kavanagh (2004) sees 'western culture as an ocularcentric paradigm, based as it is on a vision-generated, vision-centred interpretation of knowledge, truth, and reality' (Kavanagh, 2004, pp.446–447). This visuality also includes using metaphors in linguistics: Do you 'see' what I mean? Or 'seeing is believing'. The charge is that seeing *is* knowing and that sight, above the other senses, dominates. However, this occularcentrism must be brought to the surface, unpacked and challenged.

Images also have cultural power and can infiltrate and enact control within the cultural space (Vague, 1983) by inducing visual amnesia, mainly related to war and trauma through desensitisation (Mitchell, 1994). Mitchell (1987, 1994, 2005), who grappled with the purpose and meaning of images, looked for a distinct 'picture theory', stating that, metaphorically speaking, images or 'biopictures' can take on a life of their own. Many contributions followed, with the image representing '"that has been"' (Barthes, 1999, p.115) and permitting 'as if' illusions (Curtis, 2010; Kant, 2000). The image is said to be able to cross over media (Curtis, 2010), threaten boundaries of 'truth and falsity, reality and illusion' (Curtis, 2010, p.3), produce, reproduce relations and connections within homogeneity (Curtis, 2010, p.5), which are open to interpretation and do not have absolute 'fixed' or 'set' meanings. Paradoxically, images are under 'someone's control' yet out of our control (Mitchell, 1994, p.6); they offer a 'kind of immortality' (Sontag, 1977, p.11) and have meaning potential, yet are perceived as 'resistant to meaning' (Barthes, 1977b, p.32), and are fluid yet contextual. According to Pinney (2008), the question now is 'not how images 'look', but what they can 'do'' (Pinney, 2008, p.8).

As Hall (2013) states, photography is a 'signifying' social practice and 'a representational system' of language within a culture (Hall et al., 2013, p.xxi). According to Sontag (1977), the photograph changed from the time of its invention and 'enlarged our notions of what is worth looking at and what we have a right to observe' (Sontag, 1977, p.3). The photograph is a captivating and contrived two-dimensional artefact, usually smaller in size than reality, always political, which can be mistaken for 'truth' (Spencer, 2011). Photographs, like any other cultural mode of expression, are cultural tools used by social actors and draw on *intentional* meaning-making focus, yet we all perceive them differently.

The ability to 'read' visual language, whether photographs or other visuals, resides in human perception and through culture. Although complex and not fully understood, Spencer (2011) posits that learning to 'see' is not just a 'biological process but a socially and culturally learnt one' (Spencer, 2011, p.13). According to Spencer (2011), 'we read the images in front of our eyes through the pictures we have in our heads' (Spencer, 2011, p.19) based on subjective repertoires associated with cultural experiences. Humans 'see' the same things but interpret them differently based on altered, practised social-role performances (Scollon & Scollon, 2003), ignored elements, internal 'conceptual maps' (Hall, 2013, p.4), collective social and cultural repertoires and the individual's construction of reality.

From an educational perspective, according to Grabe et al. (2015), the ongoing impact of the enlightenment period canonised the written word as an expression of logic and reason. Conversely, images are viewed as emotionally loaded, lacking 'serious information value' (Grabe et al., 2015, p.300). The prevailing dominance of text in education (Daley, 2003) (further discussion by (Kress, 2005, p.5)), or 'linguistic orientation' (Fleckenstein, Calendrillo, & Worley, 2002, p.xiv), risks obscuring the potential of images to develop critical thinking and analytic meaning-making skills by constructing, producing, interpreting and disseminating visual knowledge. Because text paired with images communicates a version of reality almost automatically and is integrative within a cultural phenomenon (Serafini, 2013), it can remain unchallenged and may proliferate intentional or unintentional messages (Smith-Shank, 2010). Text-based comprehension strategies are dominant in education (Serafini, 2013). However,

without visual analytic skills, in a world where images can influence and persuade (Avgerinou, 2009), students risk multimodal visual illiteracy. Mitchell (1994) instead positively declared a 'pictorial turn', suggesting visuals were moving in from the periphery, and Felten (2008) proposed images becoming essential to communication. This 'turn' has seen an upsurge in emerging visual practices that heighten visual interaction, yet stands in contrast to education's often-prolific text-based environment.

As outlined above, the power and influence of visuality and meaning-making have prompted theoretical approaches such as multimodality, multiliteracies, visual literacy and the IG framework. This renewed interest in visuality acknowledges broader literacies and multiple modes of communication beyond reading and writing. From these perspectives, 'seeing' the world is about *critically* interpreting and formulating meaning to understand what personal and cultural signifiers bind or free us (Morrell & Duncan-Andrade, 2006).

First, multimodality, aligned with a social semiotic approach, recognises representation and communication as the assimilation of multiple modes for meaning-making (Kress, 2005). From this perspective, representation and communication arise from the social and 'its effects are outcomes of the economic and the political' (Kress, 2005, p.6), and modes as a 'system of visual and verbal entities created with or across various cultures to represent and express meanings' (Serafini, 2013, p.12). In addition, every mode has 'material, physiological, technological, and sociocultural aspects' (Serafini, 2013, p.14). Each mode has affordances and limitations and does diverse semiotic work directed towards an audience (Kress, 2005). It follows that multimodal learning and teaching recognise and legitimise using different 'mode' systems (Serafini, 2013, p.12), such as images, sounds, action, animation, video, simulations, complex diagrams and infographics, to name a few, to convey and integrate meaning. This shift towards multimodal incorporation, supported by access to technological advances, now promotes students as active meaning-makers rather than passive receivers of knowledge. In addition, the change in the significance of the image over text (Kress, 2005) heralds a new openness to the vast possibilities of these new multimodal 'literacies' (Serafini, 2013).

Multiliteracies, a term coined by the New London Group (Cope & Kalantzis, 2015; New London Group, 1996), reconceptualises what it means to be literate in the modern world. It is a broad field recognising diversity and aims to enable access to evolving language and foster critical engagement so that learners can design successful social futures (New London Group, 1996). Multiliteracy pedagogical practice, then, involves supporting the development of a set of proficiencies and social practices in response to social and cultural evolutions and technological advances (Serafini, 2013).

Visual literacy (VL) derives from a complex multidisciplinary field of study, with social semiotics and aesthetics (Berger, 2008) including the psychology of perception, with 'looking' being a physiological act, 'seeing' an interpretive act and cognition laying theoretical claims (Berger, 2008). From the theoretical debates, Avgerinou et al. (2011) propose that VL exists as a sensory-based cognitive ability for learning, stemming from the affective domain and teachable communication skills, sharing structures like grammar and syntax with written and verbal language. Although Grabe (2015) states that 'visual information processing requires no literacy, develops practically at birth' (Grabe et al., 2015, p.304), high functioning differencing and 'seeing' may need to sustain focused attention and close observation of the object. The parallels between verbal and written language are challenged when cultural differences may alter how people read and understand images. However, Griffin et al. (1994) explain differences in 'symbol' interpretation across global cultures as a lack of global integration. Individual meaning-making based on socially constructed semiotic cues may vary across cultures and also between people who share the same culture and social context. This position supports Serafini's (2013) social context-based definition of VL. Therefore, given students' propensity for visual use and experience in the modern world, Kędra et al. (2019) call for visually-led teaching, arguing that VL should be incorporated into education. Critical visual literacy can, for example, encourage a deeper questioning of power issues (Newfield, 2011) and ethical questioning by adolescents (Long, 2008).

IG is a new approach that utilises critical semiotic thinking with visual images for knowledge creation and production. IG builds on and incorporates multimodality and visual literacy as a semiotic-based critical and visual approach. According to Lacković

(2020a), IG encourages a transmodal and multimodal view of concepts 'where meanings are interrelated, also in some way "translated," and shift across modes' (Lacković, 2020a, p.328). To reiterate, in other words, the IG analysis of a pictorial sign has three aspects building on Peirce's triadic sign: '(1) the materiality of its representation and representational elements, (2) its object (what the sign refers to) and (3) its descriptive interpretations' (Lacković, 2020b, p.442).

Similar approaches include Abas's work (2019) which identified a lack of skill in 'reading' visuals and proposed visual analysis skills using multimodal and social semiotic theory. Also, Abas (2019) adapted Serafini's (2013) curricular and pedagogical framework into a visual analysis method to include a fourth phase of self-reflection and ask questions about production, description, contrasts/ contradictions and their function. Thompson's (2019) digital image guide (DIG) method highlights the differences between the concept of *shallow,* as in entertain, requiring a non-critical view*,* and *deep* images, 'to inform, to mislead, to persuade and/or to sell' (Thompson, 2019, p.112). The method involves questions to analyse, interpret, evaluate and comprehend in class. Based on social semiotics, Aiello's (2016) critical visual analysis involves deconstructing images via three types of meaning; 'representation, interaction or orientation, and composition or organization' (Aiello, 2016, pp.91–92). Thomas et al. (2008) suggest that visuals can help to develop critical readers by utilising 'visual representation to make sense of data', providing a descriptive 'close' review of artwork and a video that fails to give a hoped-for 'common experience', highlighting divergent perceptions (Thomas et al., 2008, p.26). Divergence is viewed as a failure rather than an opportunity for further discussion, as would be the case in IG critical visual analysis. In summary, the section above sets out the theoretical and cultural landscape of visuals in education and the potential of IG as a critical visual tool.

2.4.4 Visual Inquiry Research Method Combined with Photo-elicitation

Ongoing technological advances and a broader acceptance of images as valid data have increased participant-centred approaches (Emmison, 2016), and interest in visual inquiry continues to grow (Rose, 2014; Smith et al., 2012; Löfström, Nevgi, Wegner, &

Karm, 2015). According to Rose (2014), visual inquiry methods use visual materials[1] to generate data to answer the proposed research questions. As the 'photograph' within the IG photo-elicitation method is a central focus of this research, this section offers a brief overview of visual inquiry methods and how advantageous photo-elicitation combined with IG can be in eliciting data.

The photograph, invented in 1839, coincided, according to Becker (1974), with the birth of sociology and was used by anthropologists and ethnographers to record, observe and report from far-off places and unseen worlds (Bateson & Mead, 1942; Wagner, 1979). This historical timeline contributed to the development of visual inquiry methods in sociology, cultural studies and media and communication (Ali, 2018). According to Emmison (2016), a visual inquiry has four principle modes: (1) researcher as photographer producing visuals, (2) participant-centred approaches (PCA) such as visual storytelling (Drew, Duncan, & Sawyer, 2010), photovoice (Bell Kaplan, 2013; Carlson, Engebretson, & Chamberlain, 2006; Mitchell, Stuart, & Lange De, 2007; Streng et al., 2004; Wang, Yi, Tao, & Carovano, 1998), auto-photography (Lombard, 2013; McDermott & Dovey, 2013; Radley & Taylor, 2003; Thoutenhoofd, 1998; Ziller & Lewis, 1981) or photo-elicitation, (3) the use of video technology and (4) analysis (de-coding and counting) of existing visual materials. This research used two modes: (1) participant-centred photo-elicitation, researcher and participant provided photographs (and possibility auto-photography) and (2) visual materials analysis.

The photo is, according to Ali (2018), 'always embedded in the social world' (Ali, 2018, p.456) and therefore advantageous as an inquiry method to understand social life (Harper, 1998), for example, teen employment (Bolton, Pole, & Mizen, 2001). Examples of still images research include advertisements, photojournalism, domestic photographs with narrative intersections between social and personal histories, historical documents and the cultural phenomenon of the selfie (Ali, 2018). Other types of visual material include paintings, drawings, cartoons, maps and graphics. According to Aiello (2020), photographs have a polysemic nature in that they can have

[1] It is worth noting Emmison's (2016) assertion that visual material goes beyond the photograph, proposing objects, physical spaces (Whyte, 1980) and people as visual data (clothes, gesture and eye contact).

several meanings depending on their context. According to Harper (2002), they evoke 'information, feelings, and memories that are due to the photograph's particular form of representation' and have the power to 'evoke deeper elements of human consciousness that [sic] do words' (Harper, 2002, p.13), lending itself to photo-elicitation.

As stated by Ali (2018), the photo-elicitation method can use either researcher or participant photographs, or both, to elicit responses to the research questions in a semi-structured interview. According to Rose (2016), the justification for using photographs lies in their ability to act as a conductor for reflective thought and meaning-making. When combined with the IG framework, as applied here, it makes the familiar strange, more visible and, therefore, more open to interrogation and reflection, while recognising many ways of knowing (Bezemer & Kress, 2015). Photo-elicitation can have sociological and social anthropology intentions (Banks, 2001) with questions grounded in those inquiries. The method can be used in conjunction with other data seeking sociological and anthropological meaning (Alfonso, Kurti, & Pink, 2004), or as representations of that phenomenon, or offering intimate detail (Spencer, 2011) for further elaboration and confirmation. Photographs also bring rich narrative data (Reavey, 2011), as recent and historical photographs usually adhere to the participant's social context.

Photo-elicitation, viewed as a participatory method, can rebalance power between researcher and participant, including children (Conolly, 2008) and vulnerable adults (homelessness) (Johnsen, May, & Cloke, 2008). Its benefits include provoking memory, accessing deeper affectual material for sharing than verbal material alone, critical reflection and generating multiple meanings by accessing personal social histories (Griebling et al., 2013). In essence, the photo-elicitation approach permits, as Banks (2001) states, participants 'to do and think things they had forgotten, or to see things they had always known in a new way' (Banks, 2001, p.95). Similarly, Reavey (2011) points to the photograph's ability to take the participant back to the past, unlocking embodied states and emotions in contrast to their current narratives. In addition, the participatory value of photo-elicitation as 'showing' participants' situated experience rather than just 'narrating' it offers greater freedom and choice (Reavey, 2011). Areas

of use include physical activity in Hispanic women (Fleury, Keller, & Perez, 2009), women's experiences of chemotherapy (Frith & Harcourt, 2007) and family photo collections for memory work (Ali, 2018). Ashworth (2016) also used student-generated photographs of 'childhood' as a reflective discussion tool, although the images were not part of a data set.

The utilisation of a visual methodology (Banks, 2001, 2007; Emmison, Mayall, & Smith, 2012; C. Mitchell, 2011; Pink, 2012, 2013) and photographic elicitation (Collier, 1957; Harper, 2001, 2002) methodology for research on threshold concepts is an innovative approach to active meaning-making (Cretin et al., 2017; Hartel, Lundh, Sonnenwald, & Foster, 2012; Pollak, 2017; Weber, 2008). Timmermans et al. (2017) supported visual use in TC research by proposing that meaningful engagement with teachers can be 'expressed in words, as an equation, or as an image' (Timmermans & Meyer, 2017, p.360). Except for Stockall (2013), who used photo-elicitation and visual semiotics to explore inclusion in education (the interview did not use a semiotic analysis tool and viewed the data through a semiotic lens), few research studies have used a Peircean semiotic decoding structure for elicitation. Therefore, using an IG semiotic framework in photo-elicitation interviews, both face-to-face and online, to answer the research questions is a new approach.

Rainio (2014), among others, draws our attention to photographs offering an illusion to engage the viewer in visual contemplation for thinking and knowing. The dual approach of participant and researcher photographic data can visually illustrate 'threshold' concepts' as '*threshold graphics*' (Lacković, 2020a, p.367, italics in original), discussed later. It can assist participants in rendering their experiences accessible via visual representation. This approach challenges the 'taken for granted' (Harper, 2001, p.182), rendering it *unusual*, thus placing it as a concrete form *in-between* the researcher and the participant for closer analysis, simulating a case of learning liminality. Making known the participant's meaning intentions more concretely, linked to specific visual elements, guided by the IG framework, comes closer to extracting the precise meanings' intentions for analysis. The elicitation process deepens reflective interaction and yields detailed meanings related to specific visual elements, perhaps overlooked without IG. Using the IG framework, the participants can also evaluate its

potential in teaching practice and learning. Detailed participant-derived interpretations using images offer precise data and interconnected conclusions. The potential for IG photo-elicitation in further research is convincing for these reasons.

2.4.5 Characteristics of IG as Critical Visual Analysis Applied in Research

Based on the above arguments, visuals deserve more research attention (Fischman, 2001). Lacković agrees (2020a) and points to the peripherical nature of visuals in research as the photograph's semiotic and multimodal features are rarely considered and are marginalised in Higher Education (HE). On this basis, the inquiry graphics approach has been empirically researched as a pedagogical approach, where inquiry graphics act as a learning mediator.

I will explain three empirical projects in the book Inquiry Graphics (Lacković, 2020a). Project 1 of this empirical research, 'Thinking with images', was undertaken with doctoral students, primarily teachers, to evaluate the IG pedagogic potential of critical 'concept-related reflection', and thus offer multiple perspectives using images (Lacković, 2020a, p.191). The research involved making thinking processes visible by asking participants to think aloud in a semi-structured interview and search for an image in Google Images to represent an abstract concept. The questions underpinning the research were how and to what extent did the search support 'multiple concept ideas, reflection, and critical thinking about the concept' (ibid., p.192), including an evaluation of the supporting guidelines, and an evaluation of the pedagogical potential and value of this image-based task. The guidelines, as described by Lacković (2020a), were a series of questions based on image-concept relationship categorisations that are open and not limited to the stated categories or types (see Table 1, below).

Image-concept type	**Image content that links it to the concept**
Iconic & stereotypical	Image 'to describe symbolically salient, recognisable, stereotypical meaning' of the concept (Lacković, 2020a, p.192)
Contrast	'opposite of the concept/ its meaning' (ibid.)

Metaphor	'a metaphorical/ non- literal/ symbolic representation' (ibid.)
Challenging	Unconventional 'shows less obvious and unusual realization and embodiment' (ibid.)
Outcome	'follows from the application of the concept' (ibid.)
Cause/prerequisite	'conditions or prerequisite context or actions or artefacts' (ibid.)
Everyday activity or personal experience	'familiar context, a snapshot, thing or situation from personal experience or episodes' (ibid.)
Object or focus	'one object or ingredient or something that can be a focal point for scrutiny' (ibid.)
Context or place	'reminds or suggests possible settings where concepts may occur' (ibid.)
Time/history	Showing some 'historical development' or era linked to the concept (ibid.)
Culture and identity	'manifested in different cultural settings and influenced by cultural particularities' (ibid.)

Table 1: Image-concept categorisations, Lacković (2020a)

The image-concept categorisations outlined in Table one, above, offer a pedagogical tool for conceptual exploration using images beyond the interview setting and as a photographic analysis tool, as applied here in this research.

Thinking-aloud processes permitted insights into the initial image associations and ideas, keyword search procedures, the assimilation of concept and images, concept reflection and how the image is spoken about related to the concept. The guidelines as a support tool were evaluated by asking the participants to correlate their search experience. The search strategy moved from 'abstract' to 'more concrete', led by 'visualized object or description' (Lacković, 2020a, p.258), and satisfied social, cognitive

and affective roles. Lacković (2020a) reported initial image-content ideas as, 'people, objects and artifacts, situations/ events, and place/ setting' (ibid., p.261). It was noted that all participants started with the same concept and purpose, yet their search went in different directions, demonstrating the pedagogical possibility of developing concepts through images to probe multiple conceptual meanings that can be revealed.

This Google Images search exercise and conceptual unpacking task triggered metacognition as an uncovering and verbalising of attitudes and beliefs, bringing reflection on and awareness of thought processes. Lacković (2020a) identified three Google Images search strategies that students applied as concept repetition (just typing the concept), concept ideas-led (first thinking about the concept) and image ideas-led (first having image associations). A summary of thinking acts with images was also offered. These were: (1) images acting as a "projective space" to illustrate concept ideas, (2) students' tendency to respond to the whole image rather than details, (3) exposing stereotypes, bias and prejudice with possibly clichéd images, (4) the potential and significance of affect (linking images to emotional response), (5) picture details as reflection triggers, (6) familiar personal images being potentially richer for narrative on the one hand or to induce rigidity on the other, (7) genre preference may limit concept-mapping and reflection, (8) emphasis on aesthetics may limit conceptual reasoning, (9) cartoons were re-told and customised, (10) images were described rather than served to make 'inferences of concept meaning', (11) when guided by search words, images are still beneficial for reflection as the image display results propel further ideas, (12) students avoided interpreting images with no significance for them and (13) this kind of thinking reveals a relationship between representation and 'experienced reality' (ibid., p.258), potentially leading to a 'transformative experience' (ibid., p.232). Participants' image use in this study and in general, according to Lacković (2020a), may be guided by past and traditional views of the concept, and image choice may happen without much critical thinking.

Participants reported two areas of pedagogical value. First, the exercise has potential as a transformative critical pedagogy for 'challenging stereotypes, deconstruction of historical artifacts, initiating novel method of seeing things, exercising students' creativity, showing multiple concept perspectives via representations, and considering

taken-for-granted concept aspects' (ibid., p.269). Second, as learning and knowledge development, 'acting as discussion and presentation scaffolding, enhancing visual literacy, good for learning from comparison, supporting personalized learning, acting as a memory prompt, selected pictures easier to critique than drawn pictures, developing concept understanding, suitable for dyslexic students, and engaging and thought-provoking' (ibid., p.269). Several challenges were mentioned, such as unsuitable for some disciplines, group dynamics and implementing it as a form of assessment would be difficult.

Project 2 used a DBR (Design-based Research) framework and aimed to 'identify the development and character of learning when an IG learning design is implemented' (ibid., p.287) based on 'an edusemiotic IG sign model (of meaning-making)' (ibid., p.302). The IG sign model was adapted for accessibility purposes from Peirce's triad sign of 'representamen-denotation' to representation and interpretation rather than 'interpretant'. By noting picture details, or '*elements*' and their '*configuration*' (ibid., p.304, italics in original), pictorial meanings could be anchored to concepts. The task involved learners being assigned a key concept that they needed to learn in their module on Educational Psychology, engaging in a personal exploration like taking a photograph, uploading a graphic to a VLE platform or writing an explanatory narrative of how the image and concept related, discussing this with peers, and subsequent tutor feedback. The findings suggest that images served several roles for the participants, such as illustrative, metaphorical, emotional, suggestive and comparative. However, students struggled 'to be resource-analytical, concept-image imaginative and critical' (ibid., p.329), due perhaps to their lack of semiotic training and prior educational experience that stifled this kind of thinking and, potentially, the compulsory nature of the exercise. Many images were illustrative, and pictorial elements were not unpacked. As a pedagogic design outcome, it is suggested that students need analytical guidance, without heavy semiotic terminology, to improve their reflection before choosing an image and engaging at a deeper level (Lacković, 2020a).

Project 3 implemented changes to the learning design based on Project 2, informed to some extent by Project 1. Again involving students, additional guidance was given by

Lacković (2020a), and more explicit demands were made for an alternative and an iconic image, requiring two different perspectives, preventing 'bypassing' (Lacković, 2020a, p.339). This approach resulted in more profound engagement. Narrative reporting of first thoughts resulted in more 'reflective insights and criticality' (ibid., p.340) and the practising of critical visual pedagogy.

In addition to the projects outlined above, Lacković's (2020a) ''ACE' (abstract–concrete elaboration) model of 'thinking processes of an IG rhizome' (Lacković, 2020a, p.361) (Fig. 4) is used in this research to visualise the rhizomatic relations between photographic image-concepts. The ACE model visualises the relationship and intersection between an **A**bstract concept and a **C**oncrete image at the point of **E**laboration (A), and this aims to prompt 'critical consideration in order to realize the concept inquiry more fully' (Lacković, 2020a, p.362).

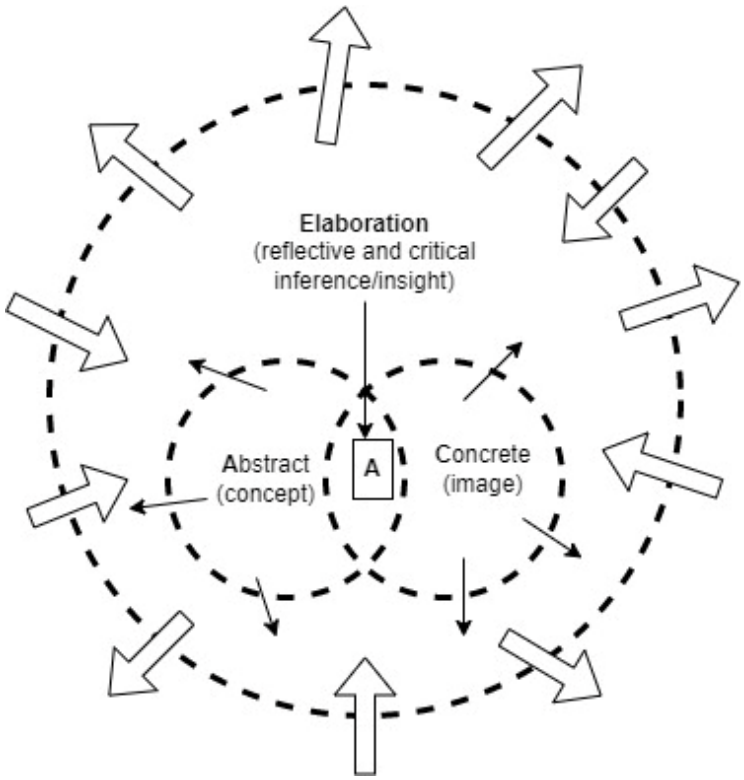

Figure 4: ''ACE' (abstract–concrete elaboration) model of 'thinking processes of an IG rhizome'.' Black arrows = possibilities for interpretation; A = (concept–image; abstract–concrete; multimodal) Anchorage; White arrows = further interpretation possibilities, all diagram relations and arrows acknowledge the dynamic relationship with the immediate sociocultural context, environment, actors, historicity, materiality' (Lacković, 2020a, p.361)

To summarise, IG, as a novel approach in higher education, has many practical applications based on transmodal and multimodal engagement, critical visual literacy, critical graphicacy, developing creative and imaginative thinking, conceptual uncovering, and alignment (between everyday and abstract) and expansion for crossing thresholds. Crucially, IG recognises and embraces the individual's capacity for unique responses, thus contributing to cooperative knowledge development (Lacković, 2020a, p.357). To conclude, Lacković (2020a) proposes IG Practice as a 'transformative interdisciplinary practice/ learning design model in Higher Education' (ibid., p.366) and suggests the 'creative exploration of threshold concepts as *Threshold Graphics* (TG)' (ibid,. p.367, italics in original)

2.5 Developing Threshold Graphics: A Critical Visual Inquiry Tool

Threshold concept theory evokes visual metaphors to covey transition from one place to another to signal the point of transformative progression. These include 'portal', 'liquid' space (Meyer & Land, 2005), 'jigsaw' pieces for disparate elements leading to integration (Land et al., 2016b), liminality as no man's land (Hokstad, Rødne, Braaten, Wellinger, & Shetelig, 2016) and a tunnel (Land et al., 2014). Lacković (2020a) offers a pedagogical visual inquiry framework to work with threshold concepts through inquiry graphics. This approach, defined as *threshold graphics* (TG) (Lacković, 2020a, p.367 Italics in original), attempts to creatively connect everyday and abstract concepts to visual representations in the world and critically engage with them for learning. Lacković (2020a) also proposed threshold graphics as visual prompts to critically question, connect relationally with concrete work and think creatively. Conceptual exploration begins with representations of simple concepts, progressing to more complexity, or vice versa.

Threshold graphics align with Serafini's (2013) assertion that representation 'stabilizes an idea or concept in a durable, public, and primarily visible form ... it requires the realization of meaning in a particular form' (Serafini, 2013, p.33), and by doing so, the concept comes into view, can be unpacked and further developed. Representations such as photographs, video stills and diagrams connect the learner to their everyday knowledge and experience and provide a way to communicate it. By analysing its elements, or signs within, its composition, and recognising its situatedness in context

and culture, meaning is formulated and re-formulated. Hall (2013) states that 'codes fix the relationship between concepts and signs' (Hall et al., 2013, p.7), allowing them to be read. Although they can never be '*finally* fixed' (ibid., p.9, italics in original), as they change over time, the representations system's importance lies in the ability to use codes to signify and 'construct meaning and transmit it' (ibid., p.xxi). Central to this approach is digital photographs functioning as 'creative semiotic scaffolding for deep reflection' (Lacković, 2020a, p.16) and the notion of students as co-creators, co-inquirers and co-producers (Land et al., 2016b). Semiosis, *as* learning, is then utilised to its fullest extent.

Using the IG visual analytical approach, semiotic learning can bring visual representations into the classroom to develop students' critical analysis abilities (Arney, 2012). As stated, the potential lies in the semiotic 'unpacking' process of exploring and connecting visual representations of 'things' to troublesome theoretical and ideological concepts. Based on the outlined literature review, I identified four benefits.

1. Identifying objects representing various concepts challenges the learner to ask questions about what they already know about those concepts.
2. Consideration of what and why they selected objects and how they represent the concept opens up further exploration and questioning.
3. Exposing the learner to many visual and conceptual possibilities leads to perspective and conceptual change, or the crossing of thresholds.
4. Learning through a critical semiotic process can act as a catalyst for social change, challenging the learner to consider how cultural and material objects represent ideologies and exercise dominant social forces on the masses.

On the final point, developing emancipatory practices is supported by Hanlon (2009), who called for a critical equality perspective in the teaching and learning of SC.

Based on the semiotic viewpoint, transformative learning utilising troublesome knowledge, as defined by TCs, is a subjective, fluid exercise using all the human

dimensions within an environment. Intermittent instability is characterised by a liminal state, where meaning generated from new signification opportunities merges with the old, giving rise to affectual discomfort and eventual assimilation. Threshold concepts are, in this sense, 'signs' that transform the learner's mind. Critical semiotic analysis, IG, then unpacks the components of signification, in this case, photographs, stretching conceptual understanding and interlocking relationships within the domain boundary, in this case, social care. New perspectives can be realised and integrated, and skills developed for unknown futures.

In the teaching context, the photograph is both a semiotic 'thing', while its contents represent 'things' or signs, each having potential for inferring meaning and learning. Signs take theor form from operations at the subconscious level, bringing cognition and affective states to consciousness. By bringing Peircean abductive reasoning into practice learning, learners exercise their whole selves, 'gut' feelings etc. Critical examination of photographs then reaches the 'gut' at pace, alerting the viewer to incoming signs for hypothetic inference, emotional processing and response. Therefore, photographs have inductive potential from critical and focused dialogue to reveal what lies beneath the surface. Indeed, Barthes (1977b) pointed to a 'photographic paradox' where implicit meaning, tied to a stock of readable signs, generates a culture for public consumption (Barthes, 1977b, p.19). Serafini's (2013) view of interpretations within culture and society sees them as politically favouring particular groups or interests, as 'every interpretation has particular cultural capital' (Serafini, 2013, p.37). Our interpretations are context-bound within a polysemous world of multiple 'truths'. There is also the endless potential of signs triggering other signs to create chains of meaning by association via denotation and connotation (Barthes, 1977a).

Unlocking these reservoirs of meaning potential via the continuous dynamic renewing of signs results in potent learning. According to Peirce, knowledge then 'comes to us by observation' (Peirce, 1974, CP 2.444), and it is also inferred by colligation and judgement. Dewey (2004) proposes that 'all communication (and hence all genuine social life) is educative' (Dewey, 2004, p.6). I argue here that observation and communication are broad, yet limiting learning to dialogue or texts as education can

do, which discounts and does not attend to the large volume of signs around us, whether observed, inferred or indirectly transmitted (Semetsky & Stables, 2014).

The IG framework can help to explore media representations of groups of Irish travellers, homelessness, drug users, youth crime, prisoners, international aid, refugees and so on, and also challenge assumptions and bias. Indeed, Hogan's (1998) discussion paper draws attention to race, stereotyping, 'white saviour', racial identity and ethnicity in the photographs used in an international development agency advertisement featuring vulnerable children in the developing world. These issues are current and relevant to SC education. Conclusions reached support more 'critical literacy' (Stables & Semetsky, 2015, p.123) and analysis of this form of media communication. From another perspective, how society responds to media images can persuade and impact on attitudes around the rights of marginal groups and who is worthy of help. Being able to unpack the meaning elements of images can offer reflective points and insights, perhaps triggering automatic assumptions and leaving them open to be challenged. In addition, these analytic skills can help to discern what the general population might view as stereotypical or negative images, and on what basis. A critically analytical view of 'unpacking' images can help to assess media impact, support advocacy, and deepen social awareness and empowerment. This approach also affords interpretative opportunities for discussing, revising and opposing prevailing or dominant ideologies. Innovative teaching methods such as Inquiry Graphics using photographs offer knowledge development opportunities through shared meaning and co-creation. Indeed, Land et al. (2014) suggest that visual representations with liminal space offer new signification opportunities for meaning-making and, as such, the student's world view can potentially change.

Profession and disciplinary education, as discussed earlier, teach how to 'think like a... ' (Meyer & Land, 2012, p.23), prompting learners to see the world differently (Quinlan et al., 2013) and adopt a new perspective. Also argued here is that habits of mind offer stability and certainty, and inducing discomfort using visuality as a pedagogical strategy can be effective if risky. By scrutinising the visual world, conventions are challenged, meaning frames are questioned and differences acknowledged, bringing forth assumptions and inferred meanings for further critical reflection. Threshold

graphics as a device offers a means to deploy a 'pedagogy of *un*certainty' (Land et al., 2016b). Several questions emerge from this position. To what extent does the visual world impact on the construction of knowledge? How then do students *read* the world around them? How can this help educators? What can be learned from deconstructing visuals? How can visuals make liminal spaces known?

Threshold graphics offer an object for thematic focus from which elements are deconstructed and meaning honed, deepening understanding. The thematic focus discussed here is based on the work of Gurwitsch (1964, 2010); as Schwartzman (2010) states,

> The more differentiated one's view of an object (the more aspects one can bring awareness to), the richer the set of elements in the thematic field associated with it and the more varied the set of elements that can serve as a thematic focus during contemplation of the object; thus, the deeper one's understanding. In contrast, a sparsely populated – or empty – thematic field leaves little possibility for deep understanding. (Schwartzman, 2010, p.31)

How we think is informed by how we perceive the world around us and the constructed reality we have created. Meaning emerges in the present time from what we already know, consciously and unconsciously, based on our past. Meaning frames are also windows on the world. For some, they are narrow and restricted, while for others, broad, wide and open, often needing reformulation based on their inadequacy (Land et al., 2016b). Therefore, threshold graphics offers a focus via which our concerns, experience and construction can be noted, projected and altered. This section has outlined threshold graphics and their potential for learning and teaching threshold concepts.

Chapter 3: Methodology and Methods

3.1 Introduction

This study sought to identify TCs via their troublesomeness (Stopford, 2021) and to evaluate the potential of IG with photographs as a pedagogical approach in social-care education and as a research method. The study was designed as a phenomenological inquiry into threshold concepts through the lived experience of students, educators and graduates. Semi-structured interviews with photo-elicitation were used as the method of data collection. In the following sections, I introduce my ontological and epistemological positions, explain the research approach and procedure, and provide details regarding the participants, context and data collection.

3.2 Ontological and Epistemological Position

My ontological and epistemological positions influence how I see reality and, therefore, how I can know about the world. I am ontologically aligned with the relative pragmatic position of the social constructivist world view of reality (Berger & Luckmann, 1991; Guba & Lincoln, 1982), and my epistemological position then defines *knowledge* as an active yet subjective occurrence formulated within the space between the actors and is thus in continuous flux and flow within a defined context. This position also agrees with Land et al.'s (2014) assertion of a permanent subjectivity regarding threshold concepts. Therefore, the choice of methodology and method reflects this socio-constructivist and interpretive approach using IG. However, it also acknowledges Peircean semiotics as pragmatic, in that it values scientific inquiry that seeks an objective reality that aims for the final goal of ultimate truth, incomprehensible and unattainable to humans. This relativist pragmatic position acknowledges the limits of interpretation within the given context and recognises knowledge as provisionally stable. The interpretative position is also reflected in how the participants are involved in the meaning-making progress using IG. I am not separate from the research in my interpretations of the data. However, I took care to note, reflect and challenge possible cognitive closure and confirmation bias, based on my experience. A theoretical framework based on semiotics, a foundation theory for understanding meaning construction and interpretation arising from our experiences,

is ontologically and epistemologically aligned and underpins all aspects of this research.

3.3 The Research Approach

My qualitative study aimed to identify TCs in social-care education and to evaluate the potential of IG with photographs as a pedagogy and research method through the lived experience of the participants. The innovative qualitative approach followed here was suitable for the phenomenon of TCs, and using images with IG to teach and learn TCs is poorly researched in social-care education. In addition, as TC research methodology is still evolving, this study contributes by developing a new methodological solution using the semiotic theory of inquiry graphics. In support, Danesi (2009) states that 'semiotics is an ideal tool for conducting research in various domains and especially in the domain dealing with how signs are learned' (Danesi, 2009, p.vii).

As this study used a qualitative approach, I considered grounded theory and case study before selecting phenomenology. A grounded theory approach was unsuitable as it would have generated a theory, when I was more interested in understanding TCs from the participants' perspective. In addition, this study was closely guided by the theoretical perspectives of IG and threshold concepts, rather than deriving 'an abstract theory of a process, action, or interaction grounded in the views of participants in a study' (Creswell, 2003, p.16). I initially designed the exploratory pilot study as a case study; however, it became clear that the context, such as a college setting, was irrelevant as each social-care programme in Ireland had similar modules; therefore, students, graduates and educators had comparable experiences of teaching and learning. I could, then, approach the research from the perspective of lived experiences, a phenomenological approach.

It is worth noting that TC research methodologies have attracted some criticism. Shinner-Kennedy (2016) suggests several shortcomings, such as an 'expert blind spot, hindsight bias and [the] curse of knowledge, the illusion of memory, the influence of language and the effects of emotion' (Shinner-Kennedy, 2016, p.254). As much TC research is retrospective, participants, as Shinner-Kennedy (2016) argues, may be unable to recall critical incidents in sufficient detail; however, learners do remember

'revelatory moments' (Shinner-Kennedy, 2016, p.254). This study introduces a novel method using inquiry graphics (IG) in a photo-elicitation interview. In contrast, other studies have used module questionnaires, open-ended written questions, short problems given to students and staff (Davies & Mangan, 2005), written explanations (Shanahan & Meyer, 2006), formative minute papers and summative end-of-term surveys (Detchev, Rangelova, Packer, Hassan, & O'Keefe, 2018), talk-out-loud interviews (Weil & McGuigan, 2010), surveys (Ricketts, 2010), comparative understanding of hypotheses (Taylor, 2006) and video observation (Carstensen & Bernhard, 2008). Although all these methods have their advantages and disadvantages, the IG photo-elicitation interview did ask participants to engage in a pre-interview reflective process to identify troublesome teaching and learning by taking a photo or searching for an image online. This process prompts memories and emotions that can be discussed further, in more depth, and analysed for specific meaning in the interview using the IG framework.

3.4 Research Procedure

This section shows how my research activities align with van Manen's (2016) six activities of an interpretive phenomenological approach. Firstly, they describe having lived experience and serious interest in the phenomenon; second, by investigating lived experience 'rather than as we conceptualize it' (van Manen, 2016, p.30). Third, by reflecting on its essential themes; and fourth, by describing and writing about it. The fifth is by 'maintaining a strong and oriented pedagogical relation to the phenomenon', and the sixth by 'balancing the research context by considering parts and whole' (van Manen, 2016, p.31).

Initially, my interest in TCs came from witnessing students experiencing troublesome knowledge and seeing those who had stepped across these learning thresholds and experienced personal and professional transformation. I first experienced IG in an early module as part of my PhD. I was impressed with how signs could be identified by careful semiotic questioning and meanings drawn. IG with visuals then offered a theory and a method to investigate, reflect and analyse the collective and individual lived experiences of TCs and draw interpretative conclusions. As the 45 interviews progressed over many months, I noticed thematic patterns while transcribing and

listening to the tapes. I noted and reflected upon the process, leading me to understand the unique aspects of the phenomenon and its whole.

As part of the literature review, I undertook an analysis of the concepts highlighted in two social-care text books; 'Applied Social Care, an introduction for students in Ireland' (Lalor & Share, 2013) and 'Social care practice in Ireland: an integrated perspective' (McCann James, Roiste, et al., 2009). I chose these books as they are recommended to students and written by social-care workers in practice, educators and discipline experts. The analysis was conducted using NVivo™, which resulted in a visual timeline (Mac Giolla Rí, 2019) and a concept map (Mac Giolla Rí, 2019). As Arksey & Knight (1999) state, this exercise helped to inform and focus my investigation into this area.

3.5 Participants, Context and Data Collection

This study involved educators who taught any subject on a social-care programme, including knowledge contributors or those who have researched the area, students who were currently in a level 7 or 8 social-care programme and graduates who had a level 7 or 8 social-care qualification. There was no time limit on when the graduates had completed their course. As many educators were researchers and expert knowledge contributors, I combined these into one group. As stated earlier, the research began as a pilot case study within two colleges and later developed into a phenomenological study (see Table 2, below). By including students and graduates, I addressed a recognised research shortcoming (Felten, 2016; White et al., 2016), as most TC research involves experts, educators and teaching assistants (McGowan, 2016). However, two student cohorts I was currently teaching were excluded due to concerns regarding power differentials discussed later in the ethics section. Also, first-year students, as their learning experiences were not at a sufficient level. This position concurs with Shinner-Kennedy (2016), who suggests first-year learners' 'knowledge structures could be fragile' and their 'ability to command the language required to articulate their experiences might be suspect' (Shinner-Kennedy, 2016, p.254), thus preferring post-graduates who have mature and well-developed meta-learning skills. In addition, Cousin (2006b) points to the value of asking final-year students to reflect on their learning journeys through 'liminal states' or troublesomeness (Cousin, 2006b, p.143).

The majority of the 45 participants were Irish/white, female and aged 26–49 years, mainly identifying as middle class followed by working class. The cohort reflects social care as a female-dominated care profession (McElwee & Parslow, 2003). The majority had level nine or ten qualifications, reflecting the large cohort of educators for whom this is a requirement of employment. Almost half of all participants, 21 had social-care qualifications, with four educators within this group being dual qualified in social work and having completed post-graduate courses. Nine educators were discipline experts in areas such as psychology and law. The majority of the educators had over 11 years of teaching experience, with only four having less than five years.

	Students	Graduates	Educators (including researchers/ expert knowledge contributors)	
Criteria for selection	Currently in a level 7 or 8 SC programme (eligible to register with CORU)	Achieved a level 7 or 8 Social-care qualification (eligible to register with CORU)	Teach **any subject** on any level 7/8 social-care programme in Ireland	
Numbers in the Pilot study 2018	-	4	9	13
Location of interviews	-	3 in Institute A, 1 off-site location	Institute A (8) institute B (1)	3 Non-IG interviews, 6 with some IG applied.
Methods of recruitment	Email sent via HOD	Email sent via HOD	Email sent via HOD	
Numbers in the Main study 2019–2020	6	8	18	32
Locations		1 Institute A, 7	*Online interview (18)	* Ethics approved – due to the

	Institute A (F to F)	Off-site locations *1 Online interview		Covid-19 pandemic
Methods of recruitment	Email sent via HOD, educator promotion, drop-in talks in class and leaflet distribution	Facebook Social-care groups and presentations to institute A MA social-care students	Email sent via HOD of relevant colleges, word-of-mouth referral, and Email sent via Irish Association of Social Care educators.	
			8 were also social-care graduates 4 were educators and knowledge contributors	
Total	6	12	27	**45**

Table 2: Participants overview

The rationale for choosing the groups was that each had knowledge and experience related to uncomfortable or troublesome threshold concepts. Educators had expert knowledge of what was conceptually troublesome, engaged in various teaching approaches, observed learning responses, and could evaluate, based on their experience, the potential of using a 'threshold graphic' as a critical visual analysis tool. Student and graduate perspectives on learning were vital (Barradell, 2013). Student learners could point to conceptual difficulties based on teaching and learning experiences and evaluate the potential of 'threshold graphics' as a learning tool. Including graduates revealed troublesome learning in hindsight, while actively engaged with practice concerns. Graduates could also evaluate IG as a teaching tool and reflect on the application of conceptual learning in social-care practice. All participants could evaluate IG as a research method.

The pilot study took place in 2018 at institute A, and the HOD sent an email invitation to all educators (approx. 25) and third-year students (approx. 120) who had just finished their level 7 social care degree and were about to graduate. For the main

study, the HOD emailed all 3rd- and 4th-year students about to complete their level 7 and level 8 degrees (see Appendix 7). Graduate MA students were contacted via their lecturers and given a short presentation and information leaflets. I requested permission from social-care Facebook groups and posted an invitation asking for graduate participants. I contacted 13 HODs governing social-care programmes in Irish colleges and requested that an invitation email be forwarded to educators, including researchers and expert knowledge contributors (see Appendix 8). The Irish Association of Social Care Educators (IASCE) as a representative organisation also sent an email on my behalf. Once participants indicated a willingness to participate by return email, a participant information sheet (see Appendix 1) and consent form (see Appendix 2) were sent, and I arranged an interview. Most interviews were conducted face-to-face, although 18 took place online using Zoom and Microsoft Teams software due to Covid-19 restrictions. Online interviews included a statement of consent that was agreed upon verbally, but in written format in the face-to-face interviews. Online interviews offered convenience and inclusivity, as no travel was required to participate, hence a significant educator and graduate cohort participated (Mac Giolla Rí, 2022a).

3.6 Semi-Structured Interviews: Embedding IG Photo-elicitation

As the research had three aims, (1) identifying TCs, (2) evaluating TG's potential as a pedagogical tool and (3) and a research method, semi-structured interviews with photo-elicitation, as discussed in the previous section, were chosen as the most appropriate method for data collection. The photo-elicitation interview was an opportunity to interpret two sets of photographs by decoding (Ali, 2018). In other words, the photographs were analysed by the participants and guided by the researcher. In a novel departure from other types of photo-elicitation, the interview offered participants an opportunity to evaluate TG's potential for teaching, learning and research applications. Therefore, the IG photo-elicitation method had two roles: to provide an active demonstration and to gather data.

For both online and face-to-face encounters, participants were asked to either take or find a photograph/s that represented troublesome or uncomfortable learning from their experience of being a learner or educator and send it to the researcher before the interview. The interviews generally lasted between 45 to 120mins, depending on

the number of submitted photographs. I printed the images for the face-to-face interviews and shared them in a PowerPoint online. The PowerPoint was sent to the participants after the interview if they wished. The interview schedules for the students (see Appendix 5), graduates (see Appendix 4) and educators (knowledge contributors) (see Appendix 3) were almost identical, with questions altered taking into account their learning or teaching position and experience.

The photo-elicitation interview used an adapted Inquiry graphics (IG) question schedule to deconstruct the images, although early interviews in the pilot study did not utilise IG in depth (see Appendix 6). The interview format developed from the pilot into five parts using IG more fully: (1) introducing and sharing the IG framework, (2) participant background information, (3) IG analysis of participant photograph/s, (4) IG elicitation analysis of the researcher's four photographs and (5) final evaluation questions. The four researcher-provided photographs were sequenced carefully, with images moving from close-up to further away .and from sepia, through black-and-white tones, to full colour.

IG elicitation (IGE) interviews (Lacković, 2020a, p.390) used IG analysis (steps 3 & 4) 'Focused Inquiry Graphics Analysis and Questions' (Lacković, 2020a, p.380) adapted from Lacković (2020a). It involved using a table with questions under the headings (1) representamen-led signifier; listing nouns and counting all the elements in the image (2) interpretant-led (signified) – denotation – focus on the core visual meaning of elements, a simple description without an overall meaning, (3) connotation-focus on the contextual meaning of elements, presumptions and meaning attributed based on the description, (4) configuration-composition, meaning derived from the relationship between elements, meanings prompted by elements, (5) anchored object: (led RQ/goals), the image element descriptions, meanings and associations linked to a social-care concept and its conceptual difficulty. I asked the same questions repeatedly about all the images. I asked each participant to hold off from drawing meaning conclusions until the elements and details of the images were named, listed and a basic description given. I did this to slow down the meaning-making process, making them more aware of individual elements. As Lacković (2020a) states, the participants engaged in a 'type of techno-semiotic or post- digital practice' (Lacković, 2020a, p.365),

albeit in a research interview, by either producing or finding images on Google and subjecting them to semiotic inquiry. Therefore, where possible, the origins and search word used to find the image in Google was questioned (Lacković, 2020a).

Interestingly, Ali's (2018) chapter on visual analysis refers exclusively to Saussure's structural linguistics without reference to Peirce's broader semiotic theories. The analysis of visual materials is, therefore, according to Ali (2018), viewed as 'texts' to be 'read' (Ali, 2018, p.456). This position is at odds with Bignell (2002), who asserts the superior effectiveness of Pierce's theory for image analysis beyond the linguistic. Although more applicable to images, Barthes (1977b), influenced by Saussure, argues that semiotic analysis includes codes or ideologies broken down further into denotations and connotations. Denotation refers to the factuality of the image, and connotation what can be inferred from its signs. The polysemous quality of interpretive visual analysis may produce varying interpretations and, as such, is an accepted feature of this approach (Ali, 2018). IG works well within this interpretive ontological and epistemological framework.

Both participant and researcher provided images, and using IG analysis questions offered opportunities to elicit discussion and reflection based on the participants' denotation and connotation reasoning, their interpretations of visual elements and their experiences. Participant-provided images offered opportunities to think, reflect and represent uncomfortable learning, in a visual form, before the interview. Critical analytic decoding of visual representations reveals sign knowledge and systems, and conceptual representations via photographs reveal agreements between culture and individual. The photograph becomes data *and* a tool for interpretative dialogue, and the main focus rather than the participant. This approach can also relieve the pressure to talk directly about sensitive matters, such as men's health (Oliffe & Bottorff, 2007).

The IG visual method also allowed the participants to reflect on and evaluate uncomfortable teaching and learning, and threshold concepts using threshold graphics. The participants and researcher provided images and analysed them using IG questioning, offering a way to interpret visually and in dialogue what conceptual learning could be defined as a threshold, both similar and distinct among the

participant groups. Rather than explaining TC theory, which can result in reduced useable data as outlined by Steckley (2020a), I focused instead on troublesome knowledge indicating TC, similar to Rodger (2011). Again as mentioned previously, there is some debate about whether the identification of TCs should contain all attributes (Barradell, 2013).

As a phenomenological study, I wanted to collect rich data from each group. As a result, I chose individual interviews over focus groups. Individual interviews offered the opportunity to demonstrate the IG framework one-to-one and evaluate the potential of threshold graphics and its possible application. Given the research's focus on various disciplines and subject areas within the social-care programme, it was unlikely that an educator- or knowledge-contributor focus group would have yielded in-depth and specific TCs. I argue this as focus groups are interactive and arrive at a collective group consensus or perspective regarding a shared experience or topic (Gibbs, 2017). Indeed, as demonstrated in Steckley (2020a), focus groups do not isolate specific TCs without further focus groups to clarify them. Student and graduate focus groups would have offered limited opportunities to discuss personal, perhaps troubling, learning experiences. I justify individual interviews as they permitted opinion diversity without group influence, allowing standalone interpretations and comparisons to be made based on these data. In addition, the research sought a wide variety of participants from all over Ireland; hence, focus groups would have been difficult to assemble (Gibbs, 2017).

All 45 interviews were audio-recorded (audio only from online interviews) and transcribed into a draft format verbatim (Braun & Clarke, 2006) using an online transcription service (rev.com)[2]. I decided to use a transcription service due to the large number of participants involved and the length of the interviews. They returned as incomplete drafts and, once corrected and images added, they were returned to and verified by the participants. Observational and theoretical reflective notes (Groenewald, 2004), memos (NVivo™) and mind maps (Diagrams.net) were generated

[2] Ethics approval and confidentiality agreement in place with the company.

as part of the analysis to capture my initial interpretive inclinations. I then imported transcripts and audio files into NVivo™ for analysis.

3.7 Researcher's Images

In consultation with my supervisor, four photographs were chosen by searching Google Images based on concepts and ideas pertinent to social care (see search words below in Table 3). The photographs needed to generate varied perspectives and conceptual associations (Lacković, 2020a). Regarding copyright, the principle of fair dealing'[3] was applied to image ©. Permission to use the images was sought and given, and I purchased the licences.

	Photographs	Details – search words	Licence and permission	Category of image-concept (Lacković, 2020a)
A		'Silenced woman' 'abuse'	Purchased iStock image 6/Nov/18 Standard Licence	Metaphor
B		'Shattered' 'reflection'	iStock images – standard licence 7/Nov/2018	Metaphor
C	Image has been removed due to copyright restrictions	'Disability'	Unable to locate copyright owner for this (historic) photograph from WillowBrook hospital USA	Time/History & Place/context

[3] 'Pt.II Fair dealing: research or private study. Fair dealing: criticism or review. 48 50.—(1) Fair dealing with a literary, dramatic, musical or artistic work, sound recording, film, broadcast, cable programme, or non-electronic original database, for the purposes of research or private study, shall not infringe any copyright in the work'. (2) Fair dealing with a typographical arrangement of a published edition for the purposes of research or private study shall not infringe any copyright in the arrangement.' 4) In this Part, "fair dealing" means the making use of a literary, dramatic, musical or artistic work, film, sound recording, broadcast, cable programme, non-electronic original database or typographical arrangement of a published edition which has already been lawfully made available to the public, for a purpose and to an extent which will not unreasonably prejudice the interests of the owner of the copyright' (Copyright and Related Rights Act, 2000).

D		'Walk in my shoes' 'Empathy' Image: Noemi Lakmaier, Experiment in Happiness (2008) Photograph of artist Noemi Lakmaier	06/11/2018 Permission granted to use	Metaphor

Table 3: Researcher's Photographs

3.8 Approach to Text and Visual Data Analysis

This research deployed two analytical approaches: reflexive thematic analysis of dialogue (Braun & Clarke, 2012, 2021) and the IG framework for image analysis (Hallewell & Lacković, 2017), based on the research questions, and this aligns with three empirical studies, projects 1, 2 and 3 undertaken by Lacković (2020a). I also, as Coffey (1996) states, go beyond 'the data to develop ideas' (Coffey & Atkinson, 1996, p.139).

Here, I set out the steps I followed in my approach to data analysis. First, I assert that the participants actively engaged in the analysis process by semiotically unpacking the photographs in the interview using the IG framework, thereby clearly identifying threshold concepts and their troublesomeness. This step represents the first layer of interpretation. As the research was a deductive 'theory-driven' approach based on inquiry graphics and threshold concepts rather than 'data driven' (Braun & Clarke, 2006, p.18), I created a structured yet flexible coding sheet with my supervisor, based on RQs and the IG framework (see Appendix 10), after transcription, so that I was familiar with the data.

Once I uploaded the transcripts to NVivo™, the code sheet provided a framework for categorisation (threshold concepts, photographs and taxonomies of signs) and further reflexive thematic analysis (Braun & Clarke, 2021), offering 'insight into patterns of meaning (themes) across a data set' (Braun & Clarke, 2012, p.57) for the next layer of

interpretation. Table Four, below, sets out my approach to data analysis incorporating visuals and text related to the research questions.

	Data analysis		
	Visual	Visual & Transcript text	Transcript Text
	Participant in interview	Using NVivo software	
	Inquiry graphics visual analysis (Lacković, 2020a) of participant- and researcher-provided images	Categorization (threshold concepts, signs and images)	Reflexive Thematic analysis (Braun & Clarke, 2012)
Research questions			
1. What 'threshold concepts (TC)' are identified within social-care subjects, by three key user groups: lecturers (knowledge contributors), current students and graduates via a threshold graphics method that combines inquiry graphics principles and photo elicitation?	*	*	
(a) What characteristics and types of threshold concepts are experienced, identified and reflected on?		*	*
(b) To what extent are the identified TCs similar (convergent) and distinct (divergent) among the groups?		*	
2. How is an 'inquiry graphics (IG) & 'Threshold Graphics' visual teaching method evaluated by lecturers with regard to learning 'threshold concepts' and overcoming 'troublesome knowledge'?			*

(a) What characteristics of the method do the participants find beneficial or challenging, and why? What does stand out for them, if anything? What forms of conceptual knowledge and engagement does it afford, or not?			*
(b) How does the method help or hinder the participants to reflect on their own knowledge and how do the students evaluate it with regard to overcoming the liminality of TCs?			*
(3) How is the visual content related to the conceptual meaning of TCs when applying IG as both a research method and in a teaching context? What does that mean for teaching and learning threshold concepts with images (as an approach of threshold graphics)?			*
a) What kinds of flexible taxonomies of chosen photographs can be concluded with regard to their content (e.g. showing people) and function (e.g. metaphor)?		*	
b) To what extent are educators/ knowledge providers', students' and graduates' photographs chosen to represent TC concepts similar (convergent) and distinct (divergent)?		*	
c) How do these different groups interpret the same photographs provided by the researcher as related to the TC? To what extent are their interpretations convergent or divergent and what does that mean for teaching-learning practice?		*	
d) What are salient photographic features reported by participants that lend themselves to conceptual		*	

exploration and inferences in the context of research methodology?			
e) What is the role of naming elements, denotation and connotation IG reasoning in understanding TCs?			*
f) What can be observed about using IG visual content to facilitate learning TCs?			*
4. What does this experience and method tell us about how we think about concepts and images? What implications does it have it for Social Care and general higher education?			*

Table 4: Approach to data analysis with research questions

3.9 Risks and Ethics

I was guided in this research by the 'Revised Ethical guidelines for Educational Research' (BERA, 2018). Permission to proceed with on-site research was given by senior management in institute A (early 2018), and ethical approval for the pilot study (early 2018), and the main study was given by institute A (March 2019) and Lancaster University (see Appendix 9). I sought updated Lancaster University ethical approval in April 2019, and interviews moved online in June due to Covid-19. Before collecting data, I sought informed consent (Crow, Wiles, Heath, & Charles, 2006). Data were anonymised with codes, thus breaking the link to the participants, for example, 'ED6B' signifying the type of participant (educator), their number (6^{th}) and either A (pilot) or B (main research). I stored physical data in a locked cabinet in my office and electronic data in an encrypted, password-protected computer. Participation was voluntary, and participants were free to withdraw at any time, without giving any explanation. There was no paid incentive for participation. However, I did offer travel expenses (not utilised). The researcher complied fully with the UK Data Protection Act, General Data Protection Regulation (GDPR) and Irish Data Protection Acts 1988 & 2003.

This research takes a continuum (Bulmer, 1982; Mercer, 2007) position with regard to insider/ outsider research, supported by Merton (1972), who states that people cannot

be satisfactorily 'located in terms of a single social status' (Merton, 1972, p.22), and Deutsch (1981) who states that 'we are all multiple insiders and outsiders' (Deutsch, 1981). I argue that I occupied the same work and study space as several educators and students, and based on the continuum I took an insider learning position (Mercer, 2007; Trowler, 2016) as I was actively teaching across the programme. Hence, to reduce the risk of any power imbalance, I did not invite current students attending my classes to be interviewed (Merton, 1972). Given my insider status, there was a risk of response adjustment or interview bias based on my prior knowledge to suit the presumed expectations of the researcher (Trowler, 2016). It is also possible that participants might have been concerned about being judged by me (Ryan, Kofman, & Aaron, 2011).

While I teach on a social-care programme, I am not a qualified social-care worker and therefore hold an outsider position based on the continuum (Mercer, 2007; Trowler, 2016). In addition, most educators and graduates were unknown to me, and we did not occupy the same work or study space. From this position of not belonging to the community of practice (Lave & Wenger, 1991; Wenger, 1998; Wenger, McDermott, & Snyder, 2002), I took care to reassure the participants of my intentions toward the profession of social care and their valued contribution, based on trustworthiness. According to Ryan et al. (2011), these are issues of 'difference and sameness and assumptions about positionality' (Ryan et al., 2011, p.50). Regardless of positionality, the researcher attempted to remain as neutral as possible and respected the participants by assuring them of confidentiality, privacy and anonymity.

From an ethical perspective, interviews with participants focus on how the 'self' has changed and uncomfortable learning experiences can revive emotional responses such as loss, fear and anger (Timmermans, 2010). While empirically helpful and insightful, I took care to support rather than exploit these re-lived events (Lucas & Mladenovic, 2007). I also noted that the researcher's images could trigger unpleasant experiences. As the interviews progressed, I communicated this possibility more overtly, pointing to the participant information sheet for counselling support information and offering the opportunity to stop the interview at any time should they become upset or feel uncomfortable.

There was a risk of identification given the relatively small groups involved in social-care education. Therefore, some research details have been altered or omitted, such as photographs (copyright, used in teaching), specific sites and discipline areas. I reported the gender of participants, although not linked to any other details. Indeed, two participants engaged based on these reassurances. As research transparency is vital, I sought a balance concerning the issues outlined without compromising the reliability of the research. I also had to consider the publication of the participant's images as identifying information, such as people, locations, prior use in teaching specific subjects and copyrighted images.

3.10 Trustworthiness

Guba and Lincoln's (1985) concept of trustworthiness is established through credibility, transferability, dependability and confirmability, although building on these criteria has been suggested (Tracy, 2010). Credibility exists when there is resonance between what the researcher represents and the experiences of co-researchers or readers. Transferability denotes generalizability assisted by thick descriptions to help readers transfer 'the research to their own action' (Tracy, 2010, p.845). Dependability is established on clear and logical processes that are open to examination. The researcher's interpretations must undoubtedly originate from the data to develop confirmability. Guba and Lincoln (1985) propose that confirmability is founded when all criteria are met. Triangulation via the use of data triangulation (Denzin, 1978; Webb, Bart, Campbell, Schwartz, & Sechrest, 1966), by researching three sets of participants who have experienced relevant phenomena, enhances validity (Arksey & Knight, 1999).

The study's findings are based on my interpretations of the data and aim to be trustworthy (Nowell, Norris, White, & Moules, 2017), having credibility, transferability, dependability and confirmability (Lincoln & Guba, 1985), as described above. Interpretations are cognisant of questioning plausible rival explanations or inferences that could offer a different theoretical explanation, perhaps influenced by my positionality and the context. I achieved this through an extensive literature review, including content analysis and the wide scope of the data collection. This broad scope also permitted comparisons and pattern-matching, and outliners between units of

analysis. I used a reflexive journal, diagrams and concept-mapping to process and capture personal reflections and insights. The aim was to achieve practical adequacy as 'useful' rather than just 'true' knowledge (Sayer, 2010, p.48).

Chapter 4: Findings – Exploring Threshold Graphics in Social Care

This chapter sets out the research questions, and the findings related to the reasons for studying social care, followed by the convergent and divergent integral concepts (ICs) linked to identified threshold concepts (TCs) within social-care subjects (the origins of troublesomeness and teaching approaches deployed), the potential of inquiry graphics (IG) with threshold graphics as a method for teaching-learning and research (researcher provided images and the taxonomies of participants provided 'threshold graphics') and evaluating threshold graphics: T&L and research. An overview of the characteristics and types of TCs identified follows, with an evaluation of the IG method with threshold graphics and the IG photo-elicitation method. I will begin with an overview of the main research questions and sub-questions.

(1) What 'threshold concepts (TC)' are identified within social-care subjects by three key user groups: lecturers (knowledge contributors), current students and graduates via a threshold graphics method that combines inquiry graphics principles and photo elicitation?

- What characteristics and types of threshold concepts are experienced, identified and reflected on?

- To what extent are the identified TCs similar (convergent) and distinct (divergent) among the groups?

(2) How is an 'inquiry graphics (IG) & 'threshold graphics' visual teaching method evaluated by lecturers, graduates and students with regard to learning 'threshold concepts' and overcoming 'troublesome knowledge'?

- What characteristics of the method do the participants find beneficial or challenging, and why? What stands out for them, if anything? What forms of conceptual knowledge and engagement does it afford, or not?

• How does the method help or hinder the participants to reflect on their own knowledge, and how do students evaluate it with regard to overcoming the liminality of TCs?

(3) How is the visual content related to the conceptual meaning of TCs when applying IG as both a research method and in a teaching context? What does that mean for teaching and learning threshold concepts with images (as an approach to threshold graphics)?

• What kinds of flexible taxonomies of chosen photographs can be concluded with regard to their content (e.g. showing people) and function (e.g. metaphor)?

• To what extent are educators' (knowledge contributors), students' and graduates' photographs chosen to represent TC concepts similar (convergent) and distinct (divergent)?

• How do these different groups interpret the same photographs provided by the researcher as related to the TC? To what extent are their interpretations convergent or divergent, and what does that mean for teaching-learning practice?

• What ae salient photographic features are reported by the participants that lend themselves to conceptual exploration and inferences in the context of research methodology?

• What is the role of naming elements, denotation and connotation IG reasoning in understanding TCs?

• What can be observed about using IG visual content to facilitate learning TCs?

(4) What does this experience and method tell us about how we think about concepts and images?

- What implications does it have for Social Care and general higher education?

4.1 Reasons to Study Social Care

Twenty-one participants (7 ED, 9 G, 5 S) were SC qualified, and of these, 16 (6 ED, 4 S, 6 G) discussed their reasons for studying social care. They identified personal care experiences, community involvement and empathic personalities (MacEachern, Cranley, Curran, & Keefe, 2020) as strong motivators to help others (Fig. 4). In nursing studies, both Wu et al. (2015) and Wilkes et al. (2015) found similar personal motivations for wanting to help and care for others. Although, not a formal research question, it offers insights into how personal experiences and goals provide strong motivation. It also underpins, in particular, the troublesomeness of integral concepts (ICs) and TCs presented in this chapter.

Figure 5: Reasons to study social care

4.2 Convergent and Divergent Integral Concepts (ICs) Linked to Identified Threshold Concepts (TCs) within Social Care Subjects

This section presents the threshold concepts (TCs) identified, the convergent and divergent integral concepts (ICs) and their characteristics and types. Threshold concepts were formulated by thematic analysis using TCs' seven characteristics (see

2.1 Section 1. Threshold concept theory). ICs, a new contribution to knowledge, were concepts that participants found troublesome, challenging to learn and integral to the identified TCs.

Convergent integral concepts (ICs) as identified by educators, graduates and students
Disability (15 Ed, 4 G, 1 S = 15)
Self (6 Ed, 3 G = 10)
Institutionalisation (14 Ed, 8 G, 2 S = 24)
Domestic Violence (15 Ed, 6 G, S 6 = 27)
Silencing (14 Ed, 8 G, 1 S = 21)
Mental health and illness issues (3 Ed, 2 G, 3 S = 8)
Advocacy (2 Ed, 1 G, 1 S = 4)
Abuse (7 Ed, 7 G, 3 S = 17)
Harm (Self and Other)(10 Ed, 4 G, 1 S = 15)
Sexual assault (1 Ed, 1 G, 1 S = 3)
Care (14 Ed, 7 G, 3 S = 24)
Situating self in people's experiences (10 Ed, 7 G, 2 S = 19)
Teamwork (1 Ed, 2 G, 2 S = 5)
Person centred approach and planning (7 Ed, 2 G, 2 S = 11)
Supervision (1 Ed, 1 G, 1 S = 3)
Reflection (7 Ed, 3 G, 3 S = 13)
Self-care (1 Ed, 2 G, 2 S = 5)

Table 5: Convergent integral concepts as identified by educators, graduates and students for all images

There were seventeen convergent integral concepts (ICs) identified by educators, graduates and students using images as threshold graphics (Table 5).

Convergent integral concepts (ICs) across two groups
Educators & Graduates
Social capital & sociological imagination (2 Ed & 2 G)
Trauma (2 Ed & 1 G)
Challenging behaviour (1 Ed & 4 G)

Creativity & Arts (7 Ed & 9 G)
Loss (2 Ed & 1 G)
Depersonalising, categorisation, homogeneity (7 Ed & 4 G)
Power (6 Ed & 1 G)
Vulnerability (3 Ed & 1 G)
Educators & Students
Gender (8 Ed & 1 S)

Table 6: Convergent integral concepts across two groups

Nine convergent integral concepts (ICs) were identified across two groups: educators and graduates, educators and students (Table 6).

Convergent integral concepts (ICs) within one group
Educators
Theory (2 Ed)
Limits of change in SCW (2 Ed)
Race & ethnicity (3 Ed)
Inequality (3 Ed)
Resilience (2 Ed)
ACEs (2 Ed)
Ethics (2 Ed)
Feminism (2 Ed)
Global perspectives (2 Ed**)**
Social constructivism (2 Ed)
Dialogic practice (2 Ed)
Graduates
Fixing & imposing solutions (2 G)
Disclosure (2 G)
Students
Empathy (2 S)

Table 7: Convergent integral concepts (ICs) within one group

I identified 14 convergent integral concepts (ICs) within each group (Table 7) and 39 single divergent integral concepts from each group (Table 8).

Single divergent integral concepts (ICs) from all groups	
Educators	
Addiction (1 Ed)	**Language** (1 Ed)
Durkheim's functionism (1 Ed)	**Body awareness in SCW** (1 Ed)
Social policy (1 Ed)	**Blind spots** (1 Ed)
Karl Marx's conflict theory (1 Ed)	**No standardised approach** (1 Ed)
Social role valorisation & principle of normalisation (1 Ed)	**Raising awareness, transformation and conscientization** (1 Ed)
Community development and health promotion (1 Ed)	**Intersectionality** (1 Ed)
Unemployment (1 Ed)	**Physical activity** (1 Ed)
Family systems theory (shadows) (1 Ed)	**Early intervention & Assessment** (1 Ed)
Language (1 Ed)	**Head, heart & hand** (1 Ed)
Law – doctrine of precedent (1 Ed)	**Shattered lives** (1 Ed)
Medical model (1 Ed)	**Autonomy** (Ed 1)
Schizophrenia (1 Ed)	**Complexity of state care** (1 Ed)
Human rights (1 Ed)	**Identity** (1 Ed)
Privilege (legal discrimination) (1 Ed)	
Government links with corporations (1 Ed)	
Clarity & distortion (1 G)	
Graduates	
Inclusion (1 G)	**Psychology Terminology** (1 G)
Perceptions (1 G)	**Victimization** (1 G)
Therapy (1 G)	**Boundaries** (1 G)
Prejudices/bias (1 G)	**Demeaning treatment** (1 G)
	Conflict and assertiveness (management) (1 G)
Students	
Workplace violence (1 S)	**Dysfunctional child roles** (1 S)

Table 8: Single divergent integral concepts (ICs) from all groups

I identified 78 integral concepts (ICs) overall. Nine learning skills and experiences were identified as troublesome and did not fit the criteria for ICs or TCs (Table 9).

Non-threshold Concepts. Troublesome learning (skills and experiences)
Skills
Critical thinking skills (1 Ed)
Communication (2 G)
Recording (Ed 1 & G 1)
Experiences
Peer Disguises (1 G)
T&L mature student (1 G)
Group work (1 G)
Exams (1 G)
French (1 G)

Table 9: Non-threshold concepts – troublesome learning (experiences and skills)

As stated, all the ICs were analysed using the characteristics of TCs and 80 ICs were linked to 14 TCs, organised under four TC thematic fields (Table 10, below). (1) Theorising self (TC) and other in care (TC) work were found to be principal TCs, followed by (2) theorising societal relations, (3) theorising interpersonal relationships and (4) theorising and implementing therapeutic SC practice. Each thematic category yielded 12 overarching TCs, and these were (1) the use of self (TC) in the (2) care (TC) of (3) others (TC) in SC practice, (4) legally regulated societies (TC), (5) enacting policy (TC), (6) theorising society (TC), (7) social justice (TC), (8) understanding traumatic events (TC), (9) theorising the person within the family (TC), (10) theorising care work and management (TC), (11) change in practice (TC), (12) values and ethical practice (TC), (13) theorising health and illness/ wellness (TC) and (14) theorising & implementing interventions (TC). Each TC is further linked to several ICs, and although classified linearly, they are integrative, in line with threshold theory (Land et al., 2016a). TCs found in other health and social areas are also referenced to the ICs and TCs, as outlined in Table 10, below.

Overarching TC fields (yellow), TCs (orange) and ICs (white)				
Threshold concepts (TCs)	**Integral Concepts** (ICs) comprising TCs			
Theorising Self and Other in Social-care work				
Use of Self (TC) in the Care (TC) of others (TC) in SC practice. TC: Care (Clouder, 2005b)**,** *TC: Self (awareness)(McAllister et al., 2015; Steckley, 2001, 2020b), TC: Other (McAllister et al., 2015)*	Reflection (ICs) TC: (Foote, 2013; Richmond et al., 2018)	Empathy (IC) TC: (Blustein, 1991; Clouder, 2005a; Donovan et al., 2013; Hooft, 1999)	Situating self in people's experiences (IC)	Supervision (Self & Other) (IC)
	Blind spots (IC)	Global perspectives (IC)	Perceptions (IC)	Body awareness in SCW (IC)
	Self-care (IC) TC: (Donovan et al., 2013)			
Theorising societal relations				
Legally regulated societies (TC)	Law – doctrine of precedent (IC)	Privilege (legal discrimination) (IC)	Human rights (IC)	
Enacting Policy (TC)	Government links with corporations (IC)	Social policy (IC)		
Theorising society (TC)	Durkheim's functionism (IC)	Karl Marx's conflict theory (IC)	Social constructivism (IC)	Power (IC)

	Gender (IC) TC: (Launius & Hassel, 2018)	Feminism (IC) TC: (Launius & Hassel, 2018)	Social role valorisation & principle of normalisation (IC)	Social capital & sociological imagination (IC)
Social justice (TC) *TC: (Levett-Jones et al., 2015)*	Inclusion (IC)	Inequality (IC)	Race (Racism) & ethnicity (IC)	Depersonalising, categorisation, homogeneity (IC)
	Unemployment (IC)	Human rights (IC)	Prejudices/bias (IC) TC: (Launius & Hassel, 2018)	Intersectionality (IC) TC: (Launius & Hassel, 2018)
	Advocacy (IC)	Institutionalisation (historical & current) (IC)	Power (IC)	
Theorising interpersonal relationships				
Understanding traumatic events (TC)	Trauma (IC)	Adverse Childhood Experiences (ACEs) (IC)	Challenging behaviour (IC)	Workplace violence (IC)
	Loss (IC)	Resilience (IC)	Shattered lives (IC)	Vulnerability (IC)
	Victimization (IC)	Abuse & Neglect (IC)	Demeaning treatment (IC)	Disclosure (IC)
	Sexual assault (IC)	Harm (self & other) (IC)	Silencing (IC)	Domestic Violence (IC)
	Power (IC)			
Theorising the person within the family (TC)	Family systems theory (IC)	Dysfunctional child roles (IC)	Gender (IC)	Identity (IC)
Theorising care work and management (TC)	Conflict and assertiveness (management) (IC)	Teamwork (IC)	Complexity of state care (IC)	
Theorising and implementing therapeutic SC practice				

Change in practice (TC)	Limits of change in SCW (IC)	No standardised approach (IC)	Not fixing or imposing solutions (IC)	
Values and ethical practice (TC)	Autonomy (IC)	Ethics (IC)	Dialogic practice (IC)	
Theorising Health and Illness/wellness (TC)	Addiction (IC)	Schizophrenia (IC)	Mental health and illness issues (IC)	Medical (& Social) model (IC) TC: (Morgan, 2012; Reeve, 2012; Richmond et al., 2018)
	Community development and health promotion (IC)	Disability (IC)	Psychology Terminology (IC)	
Theorising & implementing interventions (TC)	Early intervention & Assessment (IC)	Creativity & Arts (ICs)	Physical activity (IC)	Therapy (IC)
	Head, heart & hand (IC)	Boundaries (IC) TC: (Clouder, 2005b)	Raising awareness, transformation and conscientization (IC)	Person-centred approach and planning (IC) TC: (Levett-Jones et al., 2015; Rodger & Turpin, 2011)
	Managing clarity & distortion (IC)	Language (IC)		

Table 10: Overarching threshold concepts (TCs) & integral concepts (ICs) comprising those TCs

Based on these findings and introducing the term 'threshold rhizome' (TR), TCs and ICs are interconnected here as a TR. Put simply, these concepts are interconnected as visualised using Lacković's (2020a) IG rhizome '"ACE" (abstract-concrete elaboration) model, below (Fig. 6). For example, students' conceptual understanding of using self (TC) in the care (TC) of others was troublesome, yet it could be unpacked using

concrete images, representing ICs such as reflection, supervision and body awareness. The IG approach offers a valuable creative space that expands the concept (black arrows outwards), providing for various interpretations (for pedagogy and research purposes), as demonstrated by the IC reflection images shown below. The 'threshold rhizome' (TR) then represents a series of interconnected TCs and ICs that, once understood, become bounded (Barradell & Fortune, 2020), change discourse and are transformative. Therefore, liminality arises from negotiating and making connections between TCs and ICs within the rhizome structure, and the following section outlines the origins of this troublesomeness.

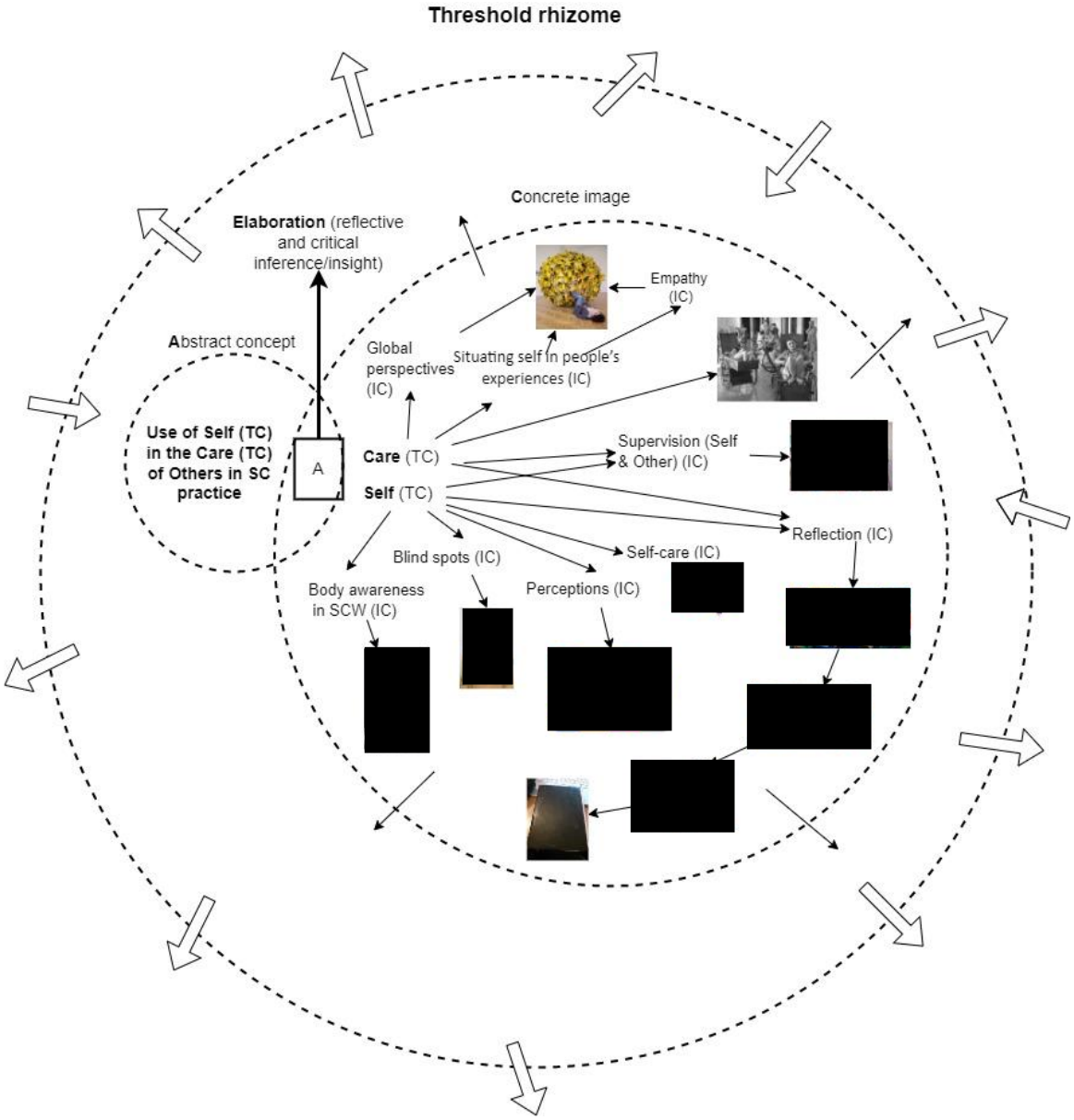

Figure 6: Threshold concepts Self and Care intertwined with ICs in the 'threshold rhizome' (TR). Some images has been removed due to copyright restrictions

4.2.1 Origins of Troublesomeness

From the analysis, troublesomeness arose in five areas: responses to concepts as (1) too far from experience, (2) or too close (see Fig. 37, below), (3) practice troublesomeness, (4) approaches in teaching TCs and ICs and (5) non-threshold concepts as troublesome learning. First, (1) too far-fetched concepts that failed to connect with everyday life, such as theorising society (TC) connected to Durkheim's

functionalism (ICs), Karl Marx's conflict theory (ICs) and indeed understanding traumatic events (TC) where idealised conceptions of the 'perfect family' and harming others was inconceivable and challenging to understand. Second, (2) too close concepts were experiential/ embodied/ sensed responses such as understanding traumatic events (TC) connected to abuse and neglect (IC), and loss (IC) that resonates strongly with experiences. For example, Stud1 forcefully realised the true nature of their experience growing up when they learnt about childhood roles in dysfunctional families. Theory in class had suddenly turned inwards and resonated with the 'self', causing hurt and distress. (3) Practice troublesomeness arose when abstract textbook concepts were witnessed as failing to live up to the ideals, values and ethics of professional care work. Examples include person-centred planning (IC) applied in reality as 'service' centred planning and where workplace violence (IC) by clients was tolerated, even expected, at the expense of the SC worker's mental and physical health. (4) Some adopted teaching approaches contributed to the troublesomeness of TCs and ICs. These included teaching (a) sensitive TCs such as abuse using humour, as described earlier, (b) re-traumatising by failing to prewarn and offer support regarding disturbing content such as detailed abuse cases and (c) broken trust, between student and teacher, due to sharing sensitive content in reflective logs. (5) Finally, troublesomeness arose from learning skills and experiences (Table 8). Examples of troublesome skills included critical thinking and objectively recording events. Experiences included dealing with peers who deployed personas or disguises, being a mature student who lacked confidence, working with conflict in groups, exam pressure and studying non-applied modules such as French.

4.2.2 Teaching Approaches

The majority of the educators had been teaching for over ten years and defined their role as actively facilitating, leading and encouraging authentic engagement by offering support ('holding' emotions and identifying strengths) and evaluating (self and student feedback), assessing and developing thinking skills. According to Springfield et al. (2017), actively motivating and challenging learners was also identified as significant in teaching TCs in OT education. Being authoritative (position of authority) and delivering content were also identified. A wide variety of teaching activities were deployed,

including reflection, external groups, peer interaction, celebrity autobiographies, documentaries, sharing stories and class-discussion teaching.

Classroom strategies included observing students, prompting and questioning, repetition, sharing and listening to stories and building knowledge. The ICs of dialogic practice, reflection (talking about before, in and on action) and creativity and arts (the disengaged facilitator in SC practice) were taught using demonstrative role modelling. The inclusion of celebrity autobiographies, documentaries, sharing stories and class discussions points to the value of hearing from others who have experienced the concept under discussion. Several teaching challenges were identified, such as encouraging students to think and learn independently and to tolerate confusion. Educators were cognisant of triggering unpleasant experiences (Martin & Hollows, 2016), with some learners acknowledging its inevitability. Difficulties here included students with no experience, being hesitant using appropriate terminology and language, having narrow views of SC roles and working within a neoliberal education system where students are consumers.

Several factors impacted on learning, such as the timing of the topic and the educators managing disengagement, providing a safe space and counselling supports to overcome debilitating emotions of fear and anxiety. For learners these included overcoming previous negative experiences of learning, boredom, becoming destabilized, rote learning and an inability to see the relevance of concepts. Also, maintaining simplistic views without acknowledging the complexity and fixed beliefs being challenged resulted in pseudo-confidence and strong arguments with the educator.

On the basis of the above findings, I present the following diagrammatic summary of teaching approaches and challenges (Fig. 7). The diagram also proposes openness as a required learning disposition and positions troublesomeness as either ‘too close’ (connected to the learner’s life that’s painful and uncomfortable) or ‘too far’ (no obvious connection to the learner’s life). Teaching approaches for ‘too close’ troublesomeness involve offering support, challenging the learner’s position and working on self. Approaches for ‘too far’ troublesomeness involve making concepts

relevant, connecting (imagining) future roles and building on basic concepts, leading to complexity. The troublesome dispositions of 'too far' and 'too close' can lead to successful threshold concept learning when the outlined teaching approaches are deployed and openness to learning is encouraged.

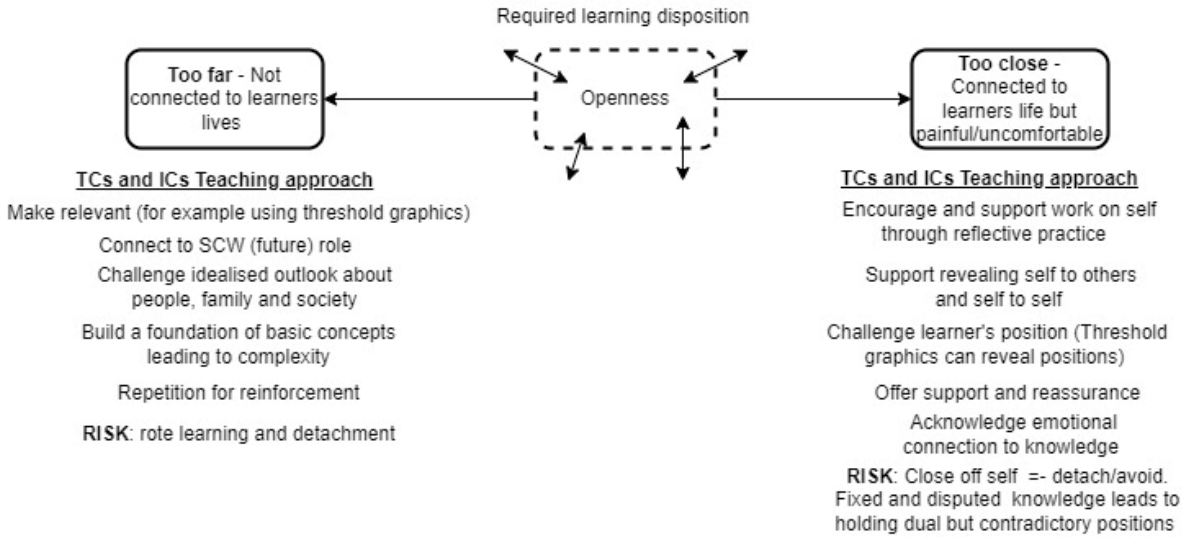

Figure 7: The thesis author's diagrammatic summary of teaching approaches, as described by the educators

4.3 The Potential Of Inquiry Graphics (IG) with Threshold Graphics as a Method for Teaching-Learning and Research

This section describes the findings based on 'inquiry graphics (IG)' using 'threshold graphics' as a teaching-learning method. I will discuss each of the four researcher-provided photographs, A, B, C & D, with examples of ICs and TCs.

4.3.1 Researcher-provided Threshold Graphics

Four researcher-provided photographs, A, B, C & D, were used with all 45 participants to identify troublesome concepts using 'inquiry graphics (IG)' as 'threshold graphics'. The process of sharing images in this way externalised the participants' thinking, replicating a student-oriented interaction for evaluation (Lacković, 2020a). The following demonstrates the capacity of concept-images, in this case threshold graphics, to reveal not only conceptual knowledge and gaps but also emotional and action responses for further examination.

4.3.2 Image A

Figure 8: Image A

Image A (Fig. 8) was chosen as it could represent the concept of a real or metaphorical abuse event (Lacković, 2020a). The image was analysed using the IG framework and identified five TCs: (1) theorising society, (2) social justice, (3) understanding traumatic events, (4) theorising the person within the family and (5) theorising and implementing interventions. There were 18 ICs that constitute these threshold concepts and that I identified through conversations around this image, presented here in order of frequency: domestic violence (12 ED, 6 G, 6 S = 24), silencing (12 ED, 7 G, 1 S = 20), abuse (7 ED, 6 G, 1 S = 14), gender (8 ED, 1 G = 9), power (6 ED, 1 D = 7), advocacy (2 ED, 1 G, 1 S = 4), sexual assault (1 ED, 1 G, 1 S = 3), person-centred approach and planning (2 ED = 2), feminism (2 ED = 2), vulnerability (2 ED, 1 G = 3), inequality (3 ED = 3) , supervision (1 ED, 1 S = 2), race (2 ED = 2), empathy (2 S = 2), identity (1 Ed = 1), family-system theory (shadows) (1 ED = 1), victimisation (1 G = 1) and prejudice/bias (1 G = 1). Communication (2 G = 2) was identified as troublesome learning.

During the IG process of listing objects, the participants began to notice several things. First, what they were noticing as image denotation was that the hand was darker than the face, seemingly a wrinkle-free face, but a wrinkled hand, the nails were short and dirty on the hand, the eyes were open wide, there was dark make-up smudged around the eyes, the mouth was covered, and it was very zoomed in on and close up. They then made a number of assumptions such as an older male hand and a young girl under duress, in shock, looking for help or a fun situation. There was a diverse range of suggested intended functions, such as a poster, exhibition, drama and advertisement. Meanings were varied, such as a hostage situation, a fun game or role play and silencing a victim. Image A was the only body-sensation reaction, with a participant saying they would feel stressed about being touched. Image A was responded to with emotional descriptions such as fear (7), uncomfortableness (4), negativity (4), anger (3), sympathy (3), sadness (3), empathy (2), curiosity (2), annoyance (2), horror (1) and detachment (1). It prompted action responses (2) of wanting to help (4), to take the hand down (1) and resolve the situation (1). Two participants said no SC concepts came to mind, and conceptual meanings were sometimes carried over from the participants' images onto the researchers' images. The troublesomeness of each of these is elaborated on in the next section.

Domestic violence was an IC linked with a TC understanding of traumatic events. The troublesomeness of domestic violence focused on triggering students' backgrounds, its prevalence regardless of class or status, misconceptions of cohesive control beyond physical assault and why a person could not just walk away. Grad11 said confronting the question of '*why do people do awful things?*' was troublesomeness as it was abstract and possibly idealised people (see Fig 7). ED6B said students require belief in themselves and inherent confidence to unpack an abusive situation and deal with terror, as the image had two people where,

> *"…both may need the services of a social-care practitioner or the care or the response of a social-care practitioner*."

Stud2 recognised the hand as a possible metaphorical sign:

> "*Maybe physical abuse, emotional abuse, I mean the hand mightn't be a real hand, it could be representative*."

The IC of silencing in domestic violence also prompted some discussion. The voicing of choices, speaking out against poor care issues, young people's social media voice, the inequality of women's voices and patriarchy. In addition, hiding one's identity, depriving someone of agency, social, political and cultural injustices, private versus public matters, the LGBT community, human rights, oppression, vulnerability and invisibility of care. Student difficulties related to triggering experiences, positive (idealised) or negative conceptions at home, why people don't speak up, lacking skills to communicate with non-verbal clients and understanding of the social, political and cultural origins of silencing. Advocacy, as a concept, was idealised and meaningless according to ED1B since, on an individual basis, in practice, service users are not listened to. Listening is required so it means being prepared to hear things we do not want to hear and maybe not being told at all. Fear of disclosure, how it might be handled and cultures of silence. was also linked to voicing.

Williams (2014) identified power as a TC in politics, and although exercised differently in this context, power and its management were found to be troublesome to balance in SC. Minimising vulnerability dependencies by empowerment as applied concepts was deemed troublesome by ED2B,

> "*…the students ... don't always see the people they work with as people in their own right, they see them as somehow being needy or dependent. Whereas I'm trying to get them to think of it more in terms of empowerment and supportive ... someone might just need support for a couple of weeks, once in their life and then they are grand again*."

There was a care hazard of SC workers' personal needs being fulfilled by service users and wanting to make them better, as stated by ED2B, "*I think people come into social care, and they don't really realise what it is to come into it and they think that they're somehow going to fix the world*." This theme was linked with the TC of change in practice.

Supervision was viewed as a troublesome yet valuable space to reflectively work through these difficulties and "*break down everything what you did*", said Stud3, and this was linked to the use of self (TC) in the care (TC) of others (TC) in SC practice.

Abuse, again related to the previous concepts, raised difficulties around triggering experiences, informed consent, historical institutions and power. For example, ED4B said:

> "*…the dynamic of abuse is hard to understand, because you think I wouldn't allow this to happen, or I'd respond, or I would call out or I would just snap the hand away so that if you're not in the dynamic of abuse, it's very difficult to understand how you'd end up in this situation of apparent powerlessness*."

Similar to Grad11, Grad 12 said, "*Yeah, it was difficult to understand, and how someone could do that to another human being, but not difficult to understand that that happens.*" Again, troublesomeness arises from the abstract, idealised concept of people based on direct experience.

The image resonated strongly as "*a gendered image*" for ED4B and highlighted gender inequalities for ED7B. Gender was spoken about concerning unchallenged gender roles in social-care work and stereotypes. For example, males take out the bins and deal with challenging behaviours, while females cook and clean. The difficulty here was constantly challenging biases. Misogyny and sexism were related, with ED10B challenging internalised misogyny and ED9B and ED16B challenging students' conceptual blindness. ED16B said students "*don't recognise sexism of any description*", and some students do not change, "*I call them the hard core who are so dedicated to their belief structure that they keep ... very strong cognitive dissonance*." The troublesomeness of these concepts arises from a lack of openness to learning (Fig. 37).

Launius et al. (2018) also identified four TCs in women's and gender studies as the social construction of gender, privilege and oppression, intersectionality and feminist praxis. Linked to feminism (IC), ED9B said they confronted female students, the majority group, about their choice of a caring career as a form of gender discrimination. Many students did not think they were feminists until feminism was

defined for them by pointing out systematic discrimination. Also, the invisibility of older women in society was linked to having or not having a voice, described above, pointed out as troublesome by ED3A. Inequality (IC) was also linked with voice by ED15B, with fairness and justice being problematic embedded concepts. Fairness usually means being equal; however, equality may involve different responses.

With regard to social justice (TC), race and marginalised groups were ICs. The hand's skin colour reminded Grad10 of holding prejudices and biases when working with foreign nationals, thus requiring self-awareness (self (TC) care (TC) of others). Winkler (2017) identified racism as a TC, and indeed race was troublesome here as white students, having never observed it, declared it did not exist. Also, where there were prejudices and biases towards travellers, it was "*not racism*", just "*fact*", said ED16B.

ED8B was aware of students learning from life experiences and having emotional responses as the,

> "*…first thing people always go to is their own experiences so I'm very cautious in watching steps we're not triggering them ... But [the] first thing is a personal thing even before we look at the kind of professional elements, people, students, pretty much respond to wanting to do something or wanting to change things."*

Personal difficulties also emerge for students when looking at family systems theory and 'family shadows' (ED14B), such as family dynamics, miscarriages and suicide. Here the theory links with the 'self' (TC), with some students being more troubled by it than others.

For Stud3, SCW is an "*investment in other people*" and attracts those with empathy (IC) or "*gold souls*", hbut the downside being you can "*feel far too much*". Stud3 said, "*a lot of times there's a lot of situations in which wI'd say in a blink of an eye 'I wish to god I didn't feel like this' what I mean because then you just ... things just wouldn't affect you".* The troublesomeness arises from learning through the self and controlling emotions and subsequent actions. Lack of empathy was also identified as a factor in teenage and workplace bullying by Stud3.

4.3.3 Image B

Figure 9: Image B

Image B (Fig. 9 above) was chosen as a metaphorical image to represent reflection (Lacković, 2020a). The image was analysed using the IG framework and identified these TCs: (1) use of self in the care of others, (2) social justice, (3) understanding traumatic events, (4) theorising the person within the family, (5) theorising health and illness/ wellness, (6) and theorising and implementing interventions. Twelve ICs and one TC were discussed and presented here in order of frequency: harm (self and other) (10 ED, 4 G, 1 S = 15) domestic violence (7 ED, 2 G, 2 S = 11), self (TC) (6 ED, 2 G, 2 S = 10), reflection (4 ED, 2 G, 2 S = 8), mental health issues (3 ED, 2 G, 3 S = 8), silencing (1 ED , 2 G = 3), self-care (1 G, 2 S = 3), challenging behaviour (2 G = 2), trauma (2 ED = 2), gender (1 ED = 1), fixing (1 G = 1), clarity/ distortion (1 G = 1) and ethnicity/ race (1 ED = 1). Homelessness (1 ED = 1) was mentioned without further details. These ICs and TCs are discussed in the following section.

Several prominent signs were noted when the participants analysed the image. These denotations included a hand holding a shard of a mirror, broken/ mirror glass/ mirror in the background, the eye/s and eyebrow reflection in a mirror, a face, fingers, palm, a person, a nose, a mouth, a thumb, nails, skin, legs and tree. Many layers, shades and textures were also noted. There was a diverse range of suggested intended functions such as a teaching tool, a drama play and highlighting issues. Connotations centred on gender attempts to read facial expressions and scenarios, such as accidental breakage or a deliberate act. ED2B questioned the image's authenticity as 'real' given the camera angle, therefore having no meaning except as artistic expression. Meanings included shattered lives, fragmentation, lost, questioning self, life gone wrong, harm, secrecy, story, violence, distortion, danger, bad luck and clarity in chaos. Image B provoked reactions such as curiosity (6), sadness (5), empathy (3), sympathy (2), neutral emotion (2), concern (2), worried (2), fascination (1) and pity (1). Action-based responses were to help (3), tidy-&-dispose (1), stop it (1) and provide support (1). One participant said they were not familiar with SC concepts.

The IC of harm (self), such as cutting, was linked with the broken shard as a common incident in SC. Troublesomeness arose in how to "*safely*" respond, said ED11B, to this "*very, very, very important work, scary work*" and for ED10B the possibility of direct student experiences with self, family or friends. Consequently, the responsibility for getting support lies with the student; as ED10B said, "*I'm constantly reminding them that while they are in training, it's their responsibility to get support for themselves now … this is where they need to choose, actively choose to heal their own wounds*".

Teaching about harm (self) and its related emotions of anger and frustration may involve, as Grad12 said, "*a low-lying understanding ... that can't be portrayed in the classroom until you go into work. Practically*." Damage to property through anger and frustration was also linked to harm (other), with Grad 6 saying, "*my own sibling did it before when he was angry*". Harm was also linked with suicide and body image issues such as body dysmorphia, bulimia and anorexia. Therefore some students have ample and direct experience of harm, although not in a professional capacity, and others have no experience. Again the troublesomeness of understanding traumatic events

(TC) lay in students' experiences that are either too close (triggering) or too far away (abstract and incomprehensible).

The IC of domestic violence was again identified in image B with a focus on murders and male victims. Troublesomeness focused on a lack of experience and the risk of "*over identifying with someone until you get caught in that distortion*", said Grad5. The related IC of challenging behaviour discussed trigger awareness, uncertainty, maintaining equilibrium, reading people, learning to de-escalate, knowing backgrounds and building rapport. Troublesomeness here was the unpreparedness for physical assault, as Grad9 said, "y*ou go to college you are not prepared to go into work and be assaulted*".

The related IC of cumulative trauma impacting on behaviour was less understood as student ED12B said,

> "*…might come in thinking, Oh, this is behaviour, and the person is to blame again all the time. It's about individualising. The blame to the person as opposed to recognising the biographical origins of the reason for that. So they might say, Oh, that is a bad person, or they might use language like that."*

Troublesomeness can be reduced when learners realise the origins of behaviour, the importance of building relationships, working with other organisations, moving towards a strengths-based approach and adopting a new language to discuss this.

The TC of self was identified in relation to the mirror reflection and the eye. These prompted discussions related to self-hatred, damaged self-esteem, splintered or shattered self, facets of the self, the formation and development of self-identity, personality, defensiveness, body issues, awareness, looking glass self, change, questioning self-perceptions, being seen, worthiness, belonging and a worthwhile life. In a link to the IC of self-care, a TC also identified by Donovan et al. (2013), as Grad7 said, "*we sometimes need to be kind to ourselves, give ourselves a hand, a little bit of self-care, reminding ourselves, which makes us offer our hand out further when we are in a better place*".

According to Stud2, troublesomeness arose from exhaustion and neglecting nutrition and exercise. The metaphorical brokenness of SC and how self-care can foster hope, said Stud6,

> "*Wherever you are, you are every part of social care [it] has its will, almost every part of it is a broken world that you're going to ... self-care, as in, it brings you back at times of despair. Like that's what this is like our hopelessness, that you're not going to help the situation or a situation isn't going to get better, that it's not shattered completely, that you have somewhere to go to bring you back from that dangerous role of feeling of not accomplishing or not helping in that situation.*"

The shattered mirror was a metaphor for lives broken by grief, loss, abuse and violence, "*a lot of the people you work with [in] social care, their lives have been shattered,*" said ED5A. The mirror was also a sign for the IC of reflection that students find difficult to practise. Troublesomeness for ED15B is viewing reflection as entirely focused on self-action, as this "*eventually become[s] entirely self-critical"* as opposed to critical reflection on policies, a TC, and procedures and systems that reinforce,

> "*...the kind of the general regulatory approach we've taken to a lot of these thing … [I] suppose reflecting on those kinds of things, what it means to be a professional about what it means, kind of wider context, particularly again back to the idea of risk because the individual individualization of risk means that we have all of these policies and procedures and systems in place … So if something goes wrong, then we can blame the individual.*"

Also related to the TC of self, the reflective mirror image also represented for ED1A not "*seeing the whole picture ... They see a little piece. Maybe that's what we see of ourselves.*" Again on the theme of reflection, self and brokenness, Stud6 uses the image as a reflective image and asks questions about emotional responses,

> "*…if that was my reflection, you've something in the palm of your hand, you've a broken world in the palm of your hand. Y'u're shocked by it, but y'u're not*

doing anything. Y'u're not contributing to it. Y'u're not feeling anything from it. Y'u're really emotionless to it."

The shard held in the hand was also a metaphor for the concept of holding the self (TC) and others (TC), fractured selves, holding on to safe spaces and the power of words to emotionally hold back turmoil (understanding traumatic events (TC) & theorising & implementing interventions (TC)). For Grad7, words formed narratives of people's lives, "*Our whole life is a narrative isn't it?*" and the hand was also "*a hand [held] out to help*".

The IC of mental health and illness issues again used the broken mirror metaphor to focus on males, fragility, multiple personalities, emotions of anger both inwards and outwards and disordered, fragmented, psychotic and irrational thinking. Difficulties were about men not seeking support and alien conceptualisation, as described by ED4B.

"*I think mental illness especially at this level here of fragmentation is much more difficult for people to empathise with or to understand if they happen to have lived experience of it or haven't known somebody that has been through it. So if people are occupying a very rational mind themselves, and they are very much in control of their own thinking then not to be in control of one's thinking seems very alien ... just a more difficult empathic leap rather than an intellectual leap I think.*"

The troublesomeness of the IC of mental health and related issues is that the concept remains abstract without experience, failing to engage the learner's empathy.

Gender (IC), male and female power (IC) differentials, roles and male abuse (IC) victims were also discussed concerning mental health and male prostitution. Troublesomeness related to male "*stoicism and lack of emotion*" said ED16B and how society is constructed (TC).

Silencing, an IC identified in image A, was also discussed with image B. ED8B said that being silenced is a common experience and that depending on its impact an, "*...alarm*

going off in their own head there is that almost. It's just a natural thing, like I said, I suppose we go to ourselves first." For ED8B, the trigger response to the image can inhibit learning as the higher-level brain cannot work when in fear and needs to return the person to a place of safety, saying, "*a place where this isn't me, this isn't my experience right now, this is an image that is separate from me*". Also, troublesomeness arises when linking personal experience to limited theoretical, psychological or sociological perspectives at the cost of other dimensions. In other words, one view can become dominant or fixed until challenged.

The broken pieces were also a metaphor for fixing things linked to the TC of change in practice and figuring out "*where do we start?*"; for Grad4,

> "*I don't think you're going to fix everything at one go so you're going to have to go piece by piece by piece. What's most important? Because I suppose when you look at social care, it's like you can say that person is an addict, but there's a reason behind that so you can't just fix them not being an addict. Maybe there's accommodation, maybe poverty, so you have to fix the other stuff behind*'."

Troublesomeness ICs arise from not fixing or imposing solutions and the limits of change in SC work.

Ethnicity, values and ethical practice (TC), and race, an IC linked with social justice (TC), also emerged with no obvious link to the image-concept. The solution for ED12B was to ask the black students in class, "*what do you like, and it opened up, took [on] the elephant in the room*". They discussed the use of the word "black" when the appropriate use of language changes. Discussions also included themes of loss, empathy, identity (Cousin, 2006a; Rodger & Turpin, 2011); assessment, risk, ecology and homelessness, although identified, were not discussed in detail.

4.3.4 Image C

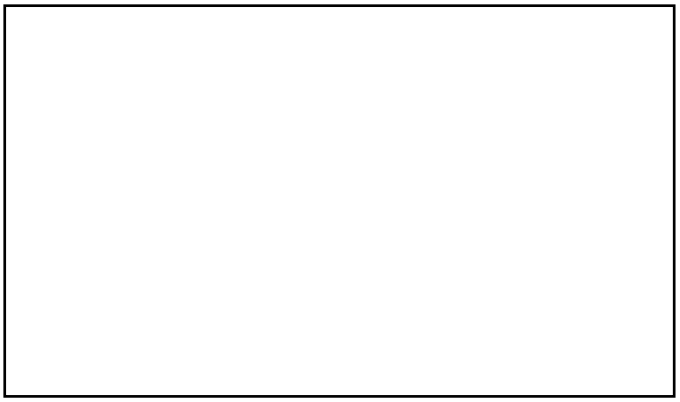

Figure 10: Image C. This image has been removed due to copyright restrictions.

Image C (Fig. 10 above) was chosen as a historical and place/ context image (Lacković, 2020a) to represent disability. The TCs identified were (1) use of self in the care of others, (2) social justice, (3) theorising health and illness/wellness and (4) theorising and implementing interventions. Seven ICs and one TC were discussed and are presented here in order of frequency: institutionalisation (15 ED, 7 G, 2 S = 24), care (TC) (14 ED, 6 G, 2 S = 22), disability (10 ED, 4 G, 1 S = 15), person-centred approach & planning (6 ED, 2 S = 8), language (1 ED = 1), intersectionality (1 ED = 1), self care (1 ED = 1) and unemployment (1 ED = 1). Theory (1 ED = 1) was mentioned without further details. These are discussed in detail further on.

The participants listed the signs within the image as wheelchairs, people, room, floors, clothing, furniture, light and shoes. Connotations and denotations centred on the people's similar haircuts, clothes such as uniforms signalling nursing care and summer attire. The haphazard positioning of people prompted discussion of poor services, neglect and no interactions. The polished floors and furniture were signs that suggested a large congregated space. The old-style wheelchairs and equipment evoked past care institutions both abroad and in Ireland, prompting discussions on past failings and ongoing progress. There was a diverse range of suggested intended functions for the photo, such as research, marketing and fundraising. The image provoked reactions such as sadness (17), anger (4), pity (3), frustration (2), despair (2), hopelessness (1), fear (1), empathy (1), disgust (1) and gratitude (1). Responses were to think about potential action (1), offer physical comfort (1), offer creative stuff (1),

measure everyone for wheelchairs (1), help (1), fundraise and change (1) and ask staff about poor treatment (1).

The IC of institutionalisation centred on new directions policy, procedures, human rights, exclusion, "warehousing" containment (ED4B), no choices, indignity, injustice, poverty, segregation, power, psychiatry, equality, professional class, integration and authoritarian and on the historical progress of care from large congregated settings to homes for those with disabilities. ED3B said, "*I would say that they [students] would find it very difficult to understand that people are institutionalised and the lack of freedom, or liberty. That's in this picture.*" ED4B said images of the past contrast with values (values and ethical practice (TC)) and concepts in action today, making it "*a good image to evoke what not to do*".

The TC of care was a dominant theme and focused on the medical and social model (IC), poor quality care in disability (IC), medical advances, empowerment inhibitors and care plans. The social model of disability was a TC in occupational therapy (Richmond et al., 2018) and social work as students tended to individualise disability as a 'personal tragedy' (Morgan, 2012, p.220). The medical model was viewed here as disabling and clinical, while the social model offered choice and acknowledged rights. For ED15B, however, students see the good points of the social model but not the failings, such as restricted choice due to staffing and lack of finance,

> "y*our service provides the services it wants to provide rather, more so than the services that individuals might choose ... that's cognitive dissonance again between the ideals people want and how they want to get there"*.

Morgan (2012) also suggests that students misunderstand the medical model as having no medical intervention. For ED10B, the dual social and medical model combines the best of both. Troublesomeness identified the limitations of professional work (change in practice (TC)), failure to critically challenge conceptual ideals from theory to practice, and apply broader principles and values of SC practice (values and ethical practice (TC)).

Poor quality care was defined as lacking respect, limited to physical needs only, removing voices, little empathy from staff and low ratios. As Grad10 said, students can still witness this today when they go to some daycare centres, "*where people are left sitting around, in day rooms or whatever, and [it] can be difficult, for the student to understand that*". Linked with poor-quality care was the lack of interactions and participation theme. The image captured the absence of activity, human contact, education, stimulation, dialogue, individual contribution, expressing the self, socialisation, engagement, community and living a full life. These discussions are also linked with a TC theorising and implementing interventions such as creativity and arts (ICs) and physical activity (ICs). ED4B said image C was a good image for social care as "*you're looking at a depersonalised social setting and aggregation of people into some category*". In contrast, one participant viewed the wheelchairs as a model for independent movement, even for that time.

The TC of theorising and implementing interventions and the ICs of power and not fixing or imposing solutions emerged as students want to "*be a fixer*", ED12B, and to "*mind people*", ED8B, rather than empower. ED8B said,

> *"that rescuer ... can sometimes come in or helping people or 'all the poor pets' are they're all ... almost talking down, with the best of intentions ... sometimes students struggle with that piece, and helping them understand the inherent power implications in that or the awful them or that they're in some way, inferior".*

"*Holding back*", ED12B said, may be the challenge for students and as ED9B says, "*it's about understanding the ability of empowering individuals to work in ways that they provide for their own care in a way that suits them and what will be their preference*". For ED17B, linking emotionally with Ireland's care past was crucial as cognition without emotion was meaningless in understanding care advances. The image was effective in doing this.

The troublesomeness of disability lies in evoking multiple ICs where learners fail to tease these apart and understand their complexity. For example, the participants discussed disability related to government policy and accountability with the

provisions of a service or "*fighting for services*" (Grad8) and a "*disability industry*" (ED15B). Also, the disability sector being viewed as more deserving, yet as ED2B said, "*mental health services or the way we treat our immigrants*" is different; students "*don't always see it*". From a societal perspective, it is the remnants of a history of care and abuse, negative attitudes to accelerated housing provision and disablism. In agreement, Reeve (2012) identifies the social modal of care in disability as a TC, pointing to difficulties of stereotyping, disablism and being misrecognised as not 'disabled enough' (Reeve, 2012, p.230). From the person's perspective, it is meeting holistic needs, receiving support, living independently and empowerment. Levett-Jones et al. (2015) identify social justice and person-centred care as TCs, as did this research, where people are experts on their own lives.

For participants, troublesomeness arose where students realised ideals often do not correspond with practice realities. Stud4 said unfulfilled personal-centred care gives way to no voice and service-orientated routines that institutionalize service users, recognising their powerlessness to alleviate structural barriers (Reeve, 2012). Other ICs were evolving language use over time, observing Crenshaw's intersectionality in action (Launius & Hassel, 2018), the concept of theory, self-care and uncritical views on the long-term unemployed.

4.3.5 Image D

Figure 11: Image D

Image D (Fig. 11) was chosen as a metaphorical image to represent empathy. The TCs identified were (1) use of self in the care of others, (2) legally regulated societies, (3) social justice, (4) understanding traumatic events, (5) theorising care work and management, (6) change in practice (7) and theorising and implementing interventions. Sixteen ICs were identified and are presented here in order of frequency: situating self in people's experiences (10 ED, 7 G, 2 S = 19), homogeneity (depersonalising and categorisation) (7 ED, 4 G = 11), creativity (6 ED, 1 G = 7), loss (2 ED, 1 G = 3), teamwork (1 ED, 1 G, 1 S = 3), domestic violence (2 ED, 1 G = 3), behaviour (2 G = 2), limitation of SC practice (1 ED = 1), trauma (1 G = 1), no standard approach (1), global perspective (2 ED = 2), person-centred approach and planning (1 G = 1), human rights (1 ED = 1), imposing solutions (1 G = 1), inclusion (1 G = 1) and therapy (1 G = 1). These will be discussed in the next section. The image provoked reactions such

as hope, fun and joy (6), happiness (3), curiosity (3), passion (2), comfort (2), positivity (2), surprise (1) and warmth (1). To recreate the photograph was the only action response. ED15B said it was '*interesting*' but was however the only participant who struggled to identify any SC concepts in image D.

As the final image and the only one with colour, participants often reacted with surprise and a sense of light-heartedness. The participants listed several prominent signs. These included the person, shoes, floor, wall, room, images and shapes. The person's actions and gender were noted along with their clothes, the shoes' colour, type and collective description. The shoes functioned as a connotation sign for walking with and being in someone else's shoes. The yellow colour of the shoes prompted positive emotions, comical associations, minions and brick roads. Meanings included journeys, yoga, Cinderella's slipper, hoarding, art exhibition, the matrix, trademarks, alternative perspectives, climate change, personal stories, death, team building, shoe ownership, ecological concerns, globalisation, campaigns, the difference and sameness of humans based on the colour of the shoes and connecting with others. There was a diverse range of suggested intended functions, such as a rally, exhibition and information booklet.

The IC of situating self in people's experiences was related to empathy, relationship building, on-judgemental (Johansson, 2014), unconditional positive regard, critical thinking and "*seeing the world from someone else's shoes*", said ED14B. Briefly, stepping into the shoes of the person they are working with is "*fundamental to their core practice"* as "*embedding themselves in the lived experiences of the people they work with is hugely important for social care workers*", said ED16B. ED8B made a similar point, saying,

> *"...none of us are in anyone's shoes and don't have that right to judge and we really need to put ourselves into ... really try and embody that to ... it's so important, I think it's such an important part of becoming a social [care] worker and an effective one*".

For Grad12, the IC of empathy "*drives*" people into SC but can develop through experiences of motherhood, for example. Difficulties include relating to losing

empathy through client assaults due to lack of support and cultural acceptance of the "*tough*" worker suppressing emotions as related to workplace violence (IC) and challenging behaviour (IC). Empathy for Grad12 was a two-way interaction, saying, "*it's very hard to have empathy for somebody else, if you're not getting the empathy back".*

Understanding traumatic events (TC) was linked with empathy (IC) and judgement to work with challenging behaviour (IC), recognising there is always a reason behind it. For Grad8, working with problematic behaviour was challenging as the solution was to change jobs. Grad8, concerning the use of self (TC) in the care (TC) of others (TC), said, however, it was necessary "*to challenge yourself and try and bear with it for a while or see how it can modify your own kind of way around things*". The discomfort here was not just conceptual but, at times, physically dangerous.

The IC of change, related to the slow work of care, was based on developing cultural awareness, acceptance and being non-judgemental. Change in practice (TC) was linked to the ICs of not imposing solutions, no standard approach and the limitations of practice. Care then, as a TC (Clouder, 2005a), requires empowering rather than imposing solutions by carefully tailoring unique approaches and interventions (TC) to meet specific needs within the boundaries (IC) of practice. Theorising and implementing interventions (TC) was troublesome as ED3A said small interventions have an impact that is not immediately apparent, "*so it's about being able to understand, being aware of where they're coming from, to accept them. You can't change everybody and you mightn't want to change everybody, it's just to allow people live ... their life*".

The shoes were a metaphorical sign. For ED10B, shoes without owners represented loss (IC), and shoes on wires were about suicide for ED18B. Grad1 spoke about her mother's experience of institutional care (IC) as she did not have shoes, resulting in lifelong foot problems. Grad 1 was impacted by this and named the IC of "*intergenerational transmission of trauma*", citing difficulties of non-recognition by society. Self-care (IC) was a theme for Grad12 and Grad10, who suggested that for students finding "*our own feet in the world*" while balancing the care needs of others was difficult.

Similarly, Stud6 used the shoe metaphor filling "*big shoes*", and finding the right fit or paths to walk on, SC, was tricky. The shoes also represented "*protection and resilience*" to cope with adversity as "*shoes carry us through our lives*", said ED3B, and for Grad4, trying on different shoes was a way to find yourself. The globe of shoes was also a sign for learning to take a global perspective on care (IC). Self-actualisation focused on the person in the image "*doing what makes them happy ... uplifting, that's important*", said ED9B. As in the previous image C, domestic violence featured an IC linked with shoes that reminded a participant of the 'In her shoes' exhibition about violence against women which aimed to personalise the experience.

The collection of shoes prompted a discussion on group work roles. The troublesome learning experience was due to issues of working together, "*we have great difficulties in [the] first years with people saying I don't like group work and those people never turned up and all that*", said ED11B. Similarly, IC teamwork was also troublesome in practice as professional hierarchies influenced status in multidisciplinary teams as assumptions of roles were based on similar qualifications that were often inaccurate, causing further difficulty. Indeed Machin et al. (2019) draw attention to education's role in supporting health- and social-care professionals to work together for person-centred care and making decisions.

The collection of shoes also provoked the concept of homogeneity (IC), incorporating in/equality (IC), cultural diversity (Thacker Thomas & Border, 2017), inclusion (IC), categorisation (IC), identity, belonging, stereotypes, depersonalising (IC), unity and commonality. Troublesomeness here centred on understanding and grappling with social justice (TC) issues in practice. This included individuals receiving uniform treatment, poor person-centred planning, conformity, opposing collectives and, somewhat counterintuitively, equality, meaning treating people differently.

The judgement of self (TC) and others (TC) highlighted misconceptions and confusion between being judged, making judgements and non-judgemental attitudes often not communicated clearly in class, confusing students. Stud1 said, "e*veryone will judge something like when you see, even when I'm doing [it] here and seeing a picture I am judging it, trying to see what I'm thinking, it's about checking yourself*".

Troublesomeness also stemmed from taking decisive action, hindered by external judgement, based on fear and lack of confidence.

Although critical thinking was identified as a TC by Rodger & Turpin (2011), its troublesomeness lay in acquiring skills in understanding different perspectives. ED1A said it is crucial to see both sides of the argument, "*although you don't agree with what's being said … not only putting yourself in other people's shoes, you have to look at the whole social, cultural context*". ED13B also said the image effectively provokes different perspectives on the ecological origins of disadvantage and about human rights values being embedded in all services. This was a passionate area for some students but not others.

The art exhibit provoked the IC of creativity linked with art, identifying goals, therapy (IC), achievement, re-energising and therapeutic interventions (TC) to "*realise self and realise maybe aspects of one's own individuality*", said ED5B. Troublesomeness was not seeing the point of creative work in practice, and while some students enjoyed self-directed creativity, ED9B said, "*just tell me what you want me to do. So I can do it*.".

4.3.6 The Taxonomies of Participants Provided 'Threshold Graphics'

This section outlines a summary of the taxonomies of participant's images related to their content and function using image-concept categories and representations of TCs, ICs and troublesome learning. Of the 112 participant-provided images submitted, 25 participants presented one image and one participant presented 12 images that were screenshots of a YouTube video (see Fig. 12). The majority of the images submitted were photographs, followed by screenshots (one participant) and then illustrations (see Fig. 13).

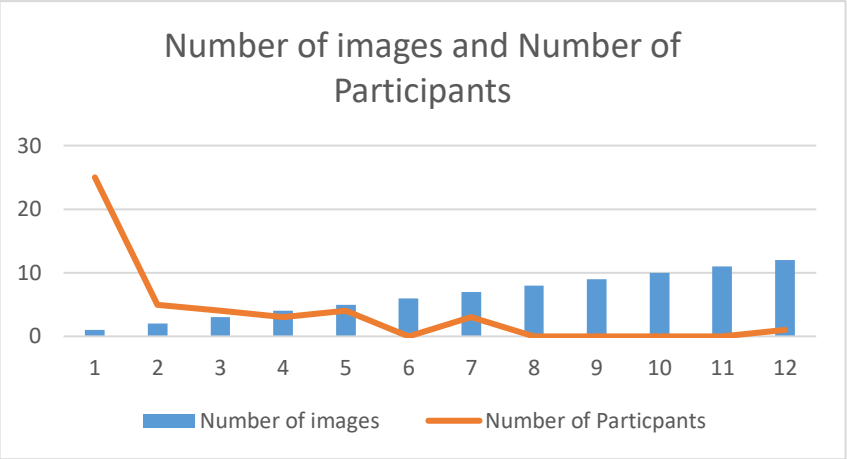

Figure 12: Number of images and number of participants

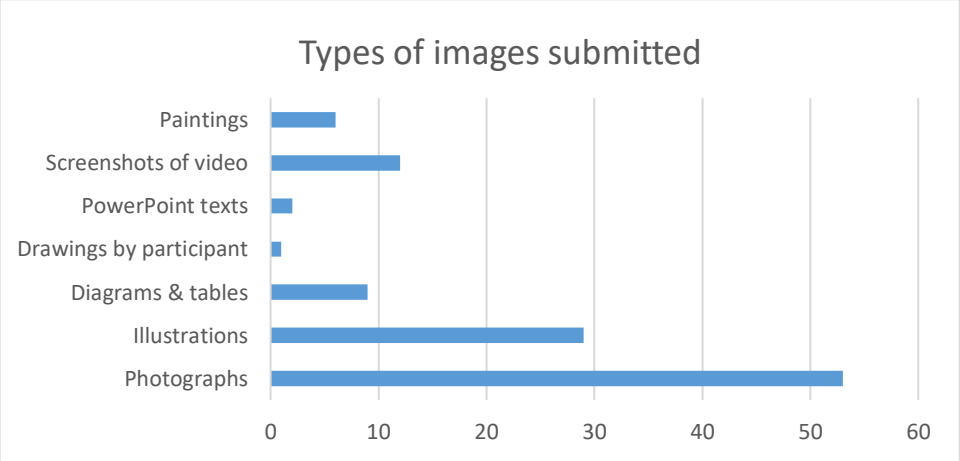

Figure 13: Types of images submitted

The majority of images submitted were photographs (53) and were, therefore, the main focus of the image-concept analysis (Lacković, 2020a), rather than illustrations or diagrams. However, all images were thematically analysed for semiotic elements. Lacković's (2020a) 11 image-concept categories (see 2.1 section 2) were used to classify the photographs. The categories are described below (Table 11): everyday activity/ personal experience, challenge, iconic & stereotype, contrast, metaphor, cause/ prerequisite, outcome, close-up focus/ object, place/ context, time/ history and culture. Each photograph was classified under multiple categories, as one image is never in just one category, with the majority coming under *everyday activity/ personal experience*, then *challenge*, followed by *place/ context*. I offer an overview of seven examples in the following section.

Image-Concept Categories Analysis of photographs only	Number	Description of image-concept categories
Everyday activity/ personal experience	37	'A depiction that would show a familiar context, a snapshot, thing or situation from personal experience or episodes; something very familiar personally to connect this experience to the concept' (Lacković, 2020a, p.204)
Challenge	28	'A depiction that shows less obvious and unusual realization and embodiment of the concept' (ibid.)
Iconic & Stereotypical	17	'...adjective to describe symbolically salient, recognizable, stereotypical meaning. A depiction that can embody a classic instance of the concept [of] understanding, tightly connected to the concept's definition' (Lacković, 2020a, p.203)
Contrast	13	'A depiction that brings out and embodies in some way that oppositional concept; it challenges the core and stereotypical meaning by showing the opposite to it' (ibid.)
Metaphor	17	'A depiction that can embody a classic instance of the concept [of] understanding, tightly connected to the concept's definition' (ibid).

Cause/Prerequisite	8	'A depiction that shows the conditions or prerequisite context or actions or artifacts that lead to the concept's realization, occurrence, surfacing' (Lacković, 2020a, p.204)
Outcome	13	'A depiction that shows what might happen as a goal, result or outcome exercising or applying the concept, e.g. an action, reaction, context, artifact' (ibid.)
Close-up Focus/Object	6	'A depiction that shows one object or ingredient or something that can be a focal point for scrutiny, for example one tool or equipment' (Lacković, 2020a, p.205)
Place/Context	21	'An image that reminds or suggests possible settings where concepts may occur: social, natural, work, leisure and other environments and settings, events' (ibid.)
Time/History	14	'A depiction that shows something about the historical development of the concept, an approach or scene from the past that relates to it, now and imagining the future' (Lacković, 2020a, p.205)
Culture	4	'A depiction that shows that a concept might exist differently in different cultural or national contexts, in a different profession, community country, identity profile and so on' (ibid.)

Table 11: Participants' concept-images' photograph categories (note: photographs are grouped in one or more categories)

This section outlines and describes image-concept categories (in italics in the text above) using the five photographs shown below. The concept of addiction [Prochaska and Diclemente's transtheoretical change model] was represented by ED9B using a photograph of a spiral staircase (Fig. 14). The photo is an example of an *everyday activity/ personal experience* being used as a *metaphor* to communicate non-linear change. It can be viewed as *iconic & stereotypical* as the theory is also called the spiral staircase model.

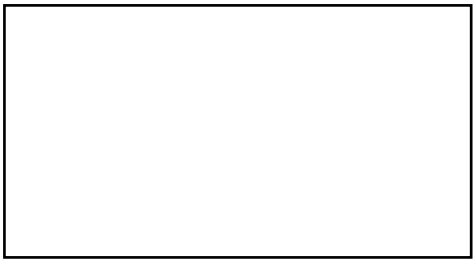

Figure 14: (1) Concept of spiral staircase model of addiction. This image has been removed due to copyright restrictions.

ED11B also used the *everyday activity/ personal experience* of a container of pencils as a *metaphor* to represent adverse childhood events (ACEs) and the factors that lead to a '*tipping point*' *outcome* (Fig. 15).

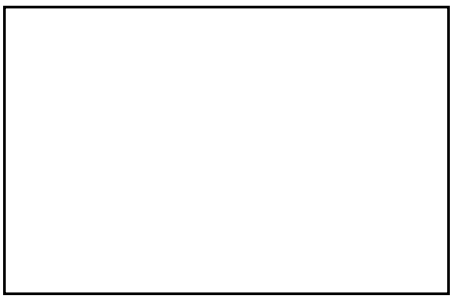

Figure 15: (2) Concept of tipping point in ACEs. This image has been removed due to copyright restrictions.

ED9B used the photograph of an emaciated young child with a vulture waiting nearby to represent the concept of ethical dilemmas and behaviour (Fig. 16). The image, used in teaching, *challenges* thinking and *contrasts* with ethical behaviour (photographer) and to some extent may have become *iconic and stereotypical*.

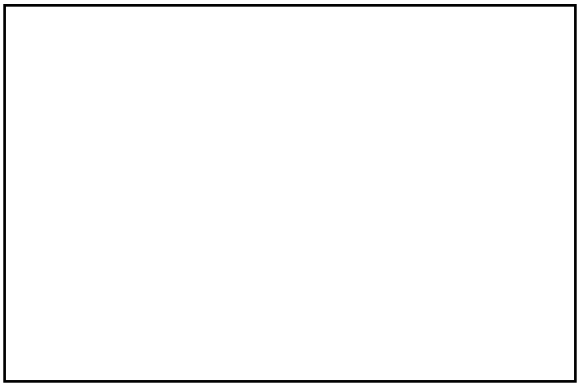

Figure 16: (3) Concept of ethical dilemmas and behaviour. This image has been removed due to copyright restrictions.

ED1B's photograph of patient files (Fig. 17) on shelves was used as a *challenging* image to teach the concept of autonomy. The medical files represent people within the *place/ context* of mental institutions at a *time* in *history* when people entering these institutions lost their identity and their humanity – the file's uniformity *contrast* with the concept of the person as unique and autonomous.

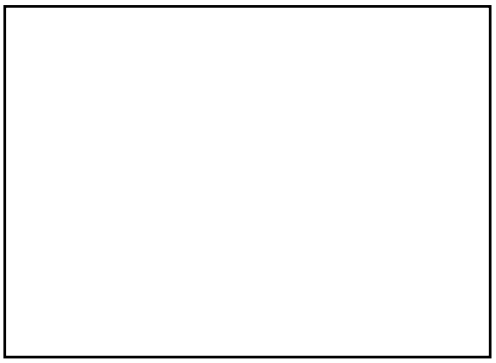

Figure 17: (4) Concept of autonomy. Patient files. This image has been removed due to copyright restrictions.

Finally, ED1A's photograph of four young men with a trophy for music represents the concept of social capital (Fig. 18). Music as an *everyday activity/ personal experience* was represented as an *outcome* and a *cause/ prerequisite* for gaining social capital.

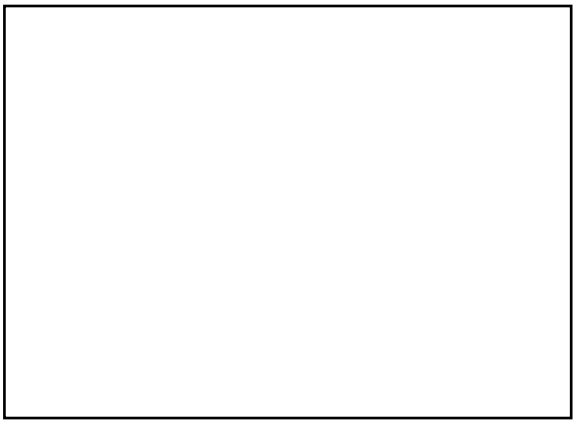

Figure 18: (5) Concept of social capital. Music. This image has been removed due to copyright restrictions.

As stated, all participants' images, including diagrams and illustrations, were thematically analysed for semiotic elements, with people featuring strongly, followed by things (candle, pens, hot air balloon, bike, file, glasses and dentures), text, place (seascape, housing estate, riverside, care building, and art room), symbols (light, bulbs, heart, heads and arrows) and animals (cat, vulture, elephant, owl, and fish) (Fig. 19).

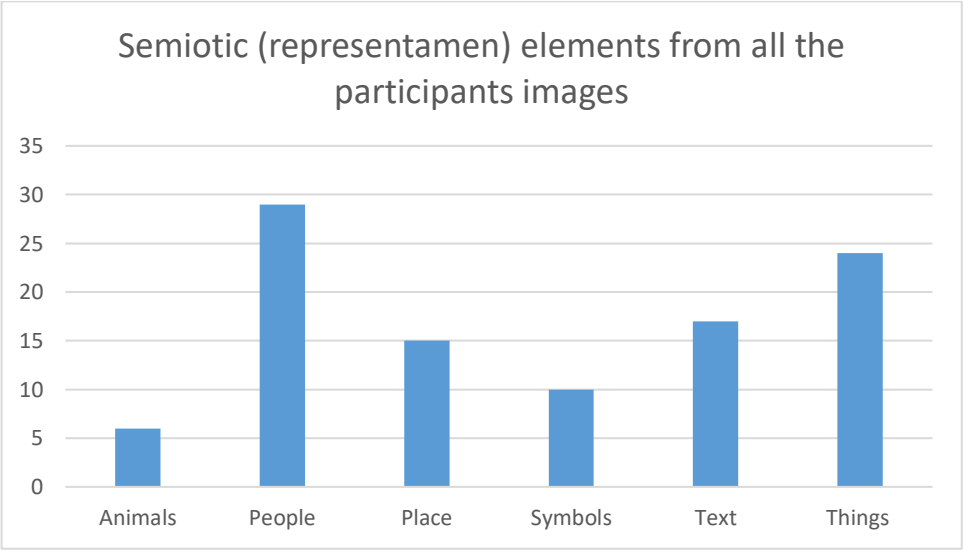

Figure 19: Semiotic elements from all participants images.

4.3.7 Convergent Troublesome and Threshold Concepts with 'Threshold Graphics'

This section discusses the convergent concepts among students, educators and graduates in response to the participant and researcher images. Two convergent TCs, care and self, and three ICs, abuse, domestic violence and reflection, are used here to demonstrate how the participants' photographic 'threshold graphics' function as a semiotic device to reveal troublesomeness. At this juncture, it is worth noting that

participants selected images before the interviews related explicitly to troublesome knowledge and experiences they felt strongly about.

4.3.7.1 Care

The TC of care (Clouder, 2005a) was identified in image C (22) and by ED12B, Grad1 and Stud5. ED12B's image, below (Fig. 20), was categorised as everyday activity/ personal experience, iconic and stereotypical, and it relates to time/ history and how the concept of care has changed. The photograph, from a teaching pack, was chosen to represent the IC of care relationships. ED12B said students struggle with "*what is care? and how care is performed?".* Difficulties hinged on stereotypical "*good mother*" and "*gendered moral imperative*" ideas of motherhood as an *"archetypal form or model of caring".* Again, by individualising the issues around care and misunderstanding empowerment, students fail to recognise social origins and interdependence and locate "*power within themselves as the worker... 'invisibleing'*", the person with them becoming the "*saviour*". This troublesomeness was linked to the TCs of care, social justice, theorising society and theorising and implementing interventions.

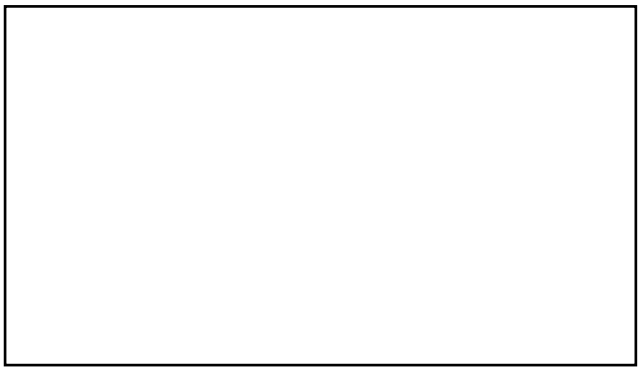

Figure 20: ED12B: Maternal care. This image has been removed due to copyright restrictions.

For Grad1, her mother's institutional care (IC) experience had a lasting impact resulting in intergenerational trauma (IC). The image below (Fig. 21) was categorised as everyday activity/ personal experience, time/ history; psychiatric unit, place/ context; large congregated settings and iconic, stereotypical representation. Grad1 struggled with learning about the human rights breaches, poor diet and living conditions of those in historical institutional care because "*that's my mother that we're speaking about*". The troublesomeness lay in how the ICs of institutionalisation and trauma

reverberated with her life experiences. Concepts were ‘too close’, connecting strongly with the inhumanity and cruelty experienced by her family and loved ones. Without intention, the educator who taught this isolated the past as objective facts; hence, Grad1 felt angry and aggrieved on behalf of those without a voice. For Grad1, care embodied the TC of social justice, thus guiding their practice work.

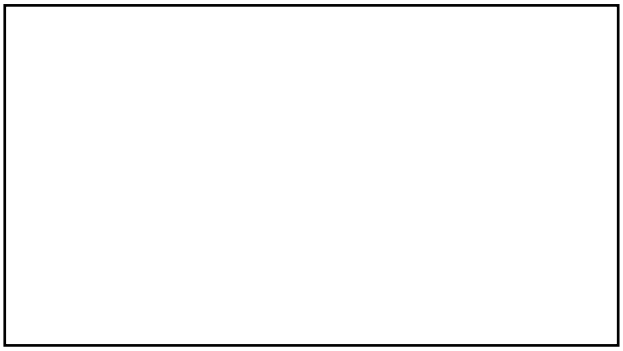

Figure 21: Grad 1: Trauma and Institutionalisation. This image has been removed due to copyright restrictions.

Stud 5, working in a care setting, selected an image to represent personal care. The image below (Fig.22) was categorised as an everyday activity/ personal experience; washing and hygiene needs, iconic and stereotypical, an outcome with a specific place/ context; professional female washing male with gloves and apron. Stud 5 said the apron and gloves were clinical signs without a personal touch. The male’s downward position of the head suggested shame and embarrassment. The uncomfortableness was the indignity of a woman washing a nude man, sometimes resulting in arousal and the unfairness of males not washing females and females doing both. Stud 5 questioned the lack of training and established gendered care practices to meet the person’s everyday hygiene needs in a dignified manner. Indeed Wearn et al. (2020) identified developing and using professional touch as a TC and pointed to how little attention is paid to this highly relevant aspect of care.

Figure 22: Stud5: Personal Care. This image has been removed due to copyright restrictions.

Care, then, is a complex TC linked to ICs resonating from personal experiences, idealised expectations and practices.

4.3.7.2 Abuse

The IC of abuse was identified in image A (14) and by Grad 5, Grad 9, Stud 2 and Stud 6. Grad 5's photograph, below (Fig. 23), represented abuse, categorised as a metaphor; light, dark and destruction, and a challenge as not an obvious representation. The trees, they said, were cut down, taking "*all off that beauty down*", and over time they were able to "*see the light to see the surviving bits … a reminder that even in the dark times that the light is there".* Troublesomeness was not being able to see the bigger picture early in their SC studies and how, as a student, a programme educator made jokes and deployed "*sensationalism and scandalism*" around the very sensitive subjects of child sexual and physical abuse. Humour has its place, said Grad5, yet the educator's jovial and disrespectful approach resulted in Grad5 questioning SC as a career.

Figure 23: Grad 5: Abuse

Grad 9's illustrative image, below (Fig. 24), represents reporting abuse (IC) against a manager within a disability organisation while a student in college. Troublesomeness stemmed from voicing what many workers ignored, being unqualified, albeit in the final year, and how the organisation and the college dealt with the allegation. Disillusionment resulted from lacking support, causing emotional stress, targeted isolation from management and observing how reporting systems worked. The report was dismissed, the manager was moved and the reported situation continued. For Grad9, there was a gap between the idealised system of safeguarding clients and reality linked to the TCs of values and ethical practice, and theorising care work and management. Also, the IC of advocacy was mentioned, linking to the TC of social justice.

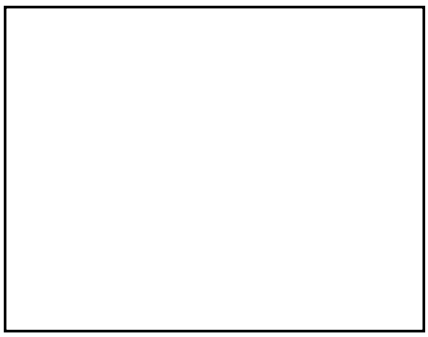

Figure 24: Grad 9: Reporting Abuse. This image has been removed due to copyright restrictions.

Stud 2's photograph of their class notes represented the IC of abuse, below (Fig. 25). It was categorised as an everyday activity/ personal experience; note-taking and notes were a focus/ object about knowledge of abuse, a metaphor and challenging. Needing to know the material was a profoundly unpleasant experience as the notes about child protection, legislation and case studies were "*just spilling out*", a sign for chaos. Unpleasantness stemmed from thinking about what people did to children, which they still do; as they said statistically, one in four of their peers had possibly been abused. For Stud 2, the learning process was physically draining and oppressive, but "*it has to be that way"*. She describes the conflict between needing to be interested and curious, yet not wanting to be, perhaps sensing an impending altering of the mind and no

longer protected by innocence. Here the troublesomeness of abuse was an abstract concept, needing to be imagined for learning, yet repulsive and horrifying.

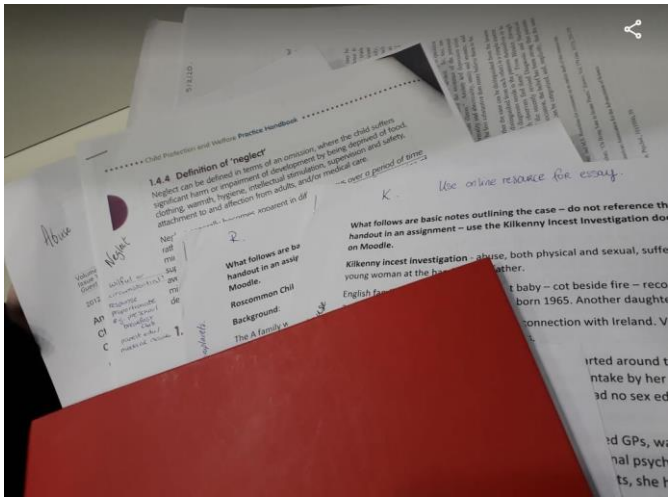

Figure 25: Stud 2: Abuse

Stud 6 selected an image from a documentary called states of fear to represent historical institutional abuse, below (Fig. 26). The documentary was a turning point for Irish society in terms of understanding the true horror of the abuse suffered. It also motivated Stud 6 to want "*to fix or help fix ... and then at the same time, it terrified me*". The concept-image *challenges* and *contrasts* with conventional conceptual thinking about abuse by showing how three young children were victims yet appeared in court to be judged. The black-and-white photograph is also *iconic and stereotypical* in how the children are positioned within a historical setting. For Stud 6, the judge's attire and position above the boys were signs of authority, and they were alone, fearful and nervous, awaiting a decision on their futures. Troublesomeness stems from the religious origins of SC, their monetary gain and that people operating these institutions "*had that level of badness or non-feeling*", or others who did nothing to help. Stud 6's empathic response (IC) attempts to feel the children's "*hopelessness and helplessness*" from their perspective. However, Stud6's religious faith was in conflict with their emotional response and how the church was viewed by society after these revelations. Meyer et al. (2006a), referring to Guest (2005 unpublished), also identified conflicting religious beliefs as troublesome.

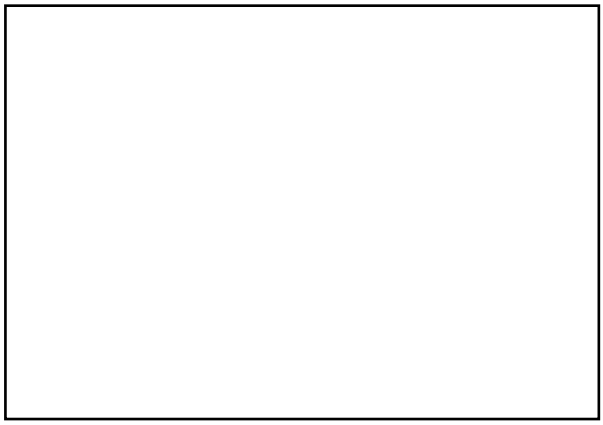

Figure 26: Stud 6: Historical institutional abuse. This image has been removed due to copyright restrictions.

Again, abuse is a complex embodied concept linked to the TC of care, and the ICs of empathy and advocacy are embedded along a historical timeline. Troublesomeness arises from personal experiences of voicing, needing to know, strong empathic responses to injustice and seeing light and darkness in the destruction.

4.3.7.3 Domestic Violence

The IC of domestic violence was identified in image A (24), image B (11) and image D (3), and by ED9B. A superman emblem was used by ED9B, below (Fig. 27), to teach how society's perceptions have changed regarding domestic violence. The original story mentions a "*wife beater*" and was not a secret in the "*original children's story in 1938*", yet it persists as a family and social issue.

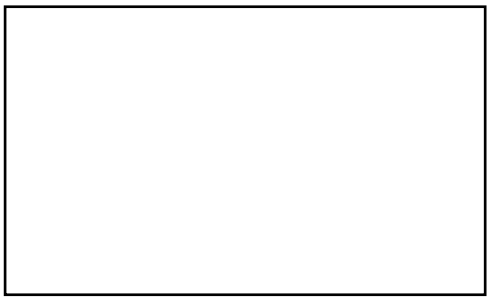

Figure 27: Grad 9. Domestic violence. This image has been removed due to copyright restrictions.

4.3.7.4 Reflection

The IC of reflection (Foote, 2013; Hyde, Flatau, & Wilson, 2018; Martin & Hollows, 2016; Richmond et al., 2018) was identified in image B (8), and by ED4B, ED2B, ED8B, ED18B, Grad2, Grad4 and Stud 5. ED4B's image, below (Fig. 28), was described as Freire with crossed legs, holding a flower, resting on books outside the classroom with

ordinary people and in a setting with "*life and movement*", sunlight and swirling colours. Reflection was taught by ED4B through the lens of Freirean theory. The image describes how learning to think reflectively requires grasping the dynamic dialogic movement of listening and responding with empathy (IC), love and non-judgement. The practice of these related concepts was viewed as troublesome for students.

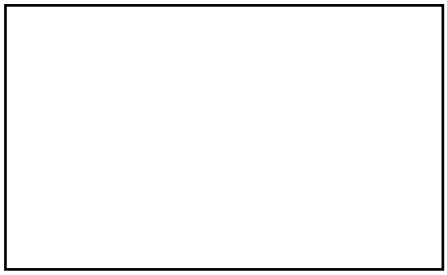

Figure 28: ED4B. Reflection. This image has been removed due to copyright restrictions.

ED2B then describes the illustrative photograph of a girl "*who is looking upwards and above her head is a mechanism that is like a brain with cogs churning in the middle,*" representing the student's internal struggle with reflective practice (Fig. 29, below). The cogs and question mark signs, dispersed across the image, conveyed a scattering of information and reflective practice that keeps the "*bits"* working hard for sense-making and integration. Students found thinking *"about their thinking*" a challenge as they learn to take account of "*alternative perspectives*" through questioning behavioural reactions and emotions. ED2B said resistance tends to be gendered, with males taking more time to see others' perspectives.

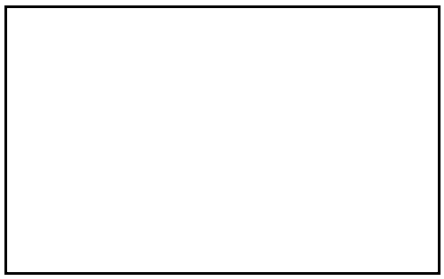

Figure 29: ED2B. Reflection. This image has been removed due to copyright restrictions.

Again discussing reflection as a troublesome concept, ED8B described the image below, (Fig. 30), as a "*cartoon person looking in the mirror holding a book ... no eyes ...*

confused expression in the mouth" with different elements such as blind spots, a plant, weighing scales and a dart board represented in the image. Reflective practice for ED8B is complex and challenging for students with theories, frameworks, terminology and learning about themselves. The "*chaos*" of the image represents this. Some students with particular personality types had no difficulty, while others struggled to put theory into practice and move past descriptive writing. Demonstration and repetition proved to be a successful teaching approach.

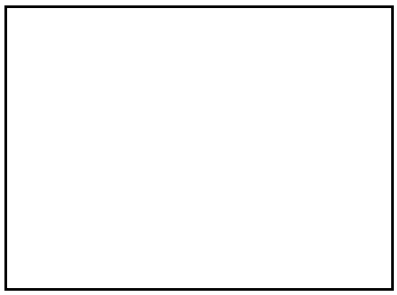

Figure 30: ED8B. Reflection. This image has been removed due to copyright restrictions.

ED18B chose an image, below (Fig. 31), of the Grand Canyon and categorised it as a challenging image and a metaphor for reflection. The deep layered formation, history in the vast landscape with "*lots of peaks, and troughs*", "*gradients between the colours*" and layers were used to represent the troublesomeness of reflection. The Grand Canyon was also a metaphor for looking at something from another perspective. Again similar to ED8B, ED18B, who was new to teaching, described the frustration of explaining "*how to write reflectively and they still come back with descriptive writing*". The issue is that they "*say what they see*" rather than displaying the "*facets of thinking*". ED18B was also in a liminal self-reflective space with the students, trying to find a way through.

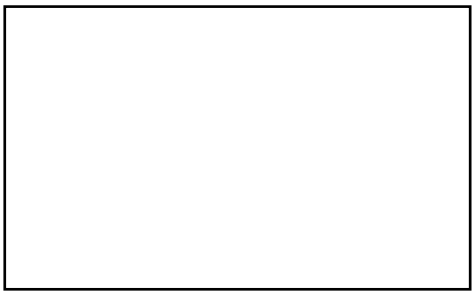

Figure 31: ED18B. Reflection. This image has been removed due to copyright restrictions.

Grad2 selected a photograph of a girl looking in a mirror to represent the uncomfortableness of reflection from the student's perspective (Fig. 32, below). It was categorised as a metaphor, everyday activity/ personal experience and iconic and stereotypical. Troublesomeness lay in developing self-awareness to "*look at yourself, look at your own practice, especially learning from your own experience*" to identify "*attitudes. Strengths. Needs*" and what were not done well. Grad 2, as an "*introverted and quite private person*", "*forced herself*" to reflect. However, they found the process "*very intrusive*" as the educators read it. The fear of being judged for making mistakes and a lack of confidence made her feel vulnerable. There was defensive behaviour, asking "*Why do we have to do this? This is very personal.*" This behaviour is an example of Cousin's (2006b) 'defended learners' (2006b, p.141). The educator's response altered Grad 2's thinking,

> "*If you can't do this on paper now, how are you supposed to do it in supervision with staff and then how are you supposed to learn from your mistakes? See what you could do differently*."

Grad2 entered a liminal space and their attitude changed gradually as the benefits were better understood.

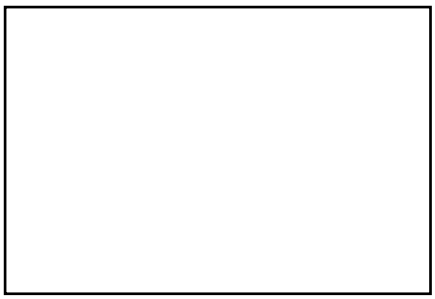

Figure 32: Grad2. Reflection. This image has been removed due to copyright restrictions.

Grad4 selected an illustrative image to represent learning to think about the perspectives of others (TC) through reflection (Fig. 33, below). Grad4 said reflection helped to an awareness of the "*reflex*" to judge without knowing the person, saying, "*I think about it later on and I think was that right or wrong, should I have done that different, should I have*". Grad4 also viewed reflection as a form of self-care.

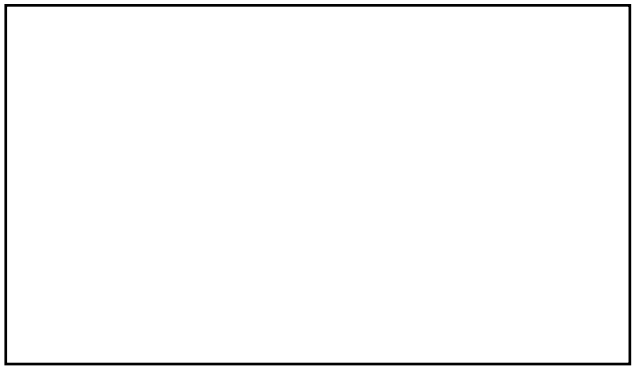

Figure 33: Grad5. Perspectives of others through reflection. This image has been removed due to copyright restrictions.

Lastly, Stud5's photograph of their reflective log book is a *close-up focus/ object* representing the troublesomeness of reflective practice (Fig. 34, below) from their *everyday activity/ personal experience*. The photograph *challenges* the boundaries of privacy in reflective writing for assignments, and how a lack of communication leads to broken trust. Like Grad2, Stud 5 found writing about personal life experiences in a reflective diary uncomfortable. Stud5 was told they could select parts for the assignment; however, they later realised the whole diary needed to be submitted to the educators. She said this was "*intrusive*" and unfair, and she felt betrayed and angry, yet it was beneficial, saying, "n*ow in the end it did me good because I found it a healing process for my postnatal depression*". They noticed a thematic thread running through their writing, prompting further self-reflection and insight. Grad2's and Stud5's experiences demonstrate how the reflective process can expose a student's vulnerability. Stud5 said, "*It was like opening up my soul almost and sharing it with lecturers, who read it, and getting graded on it."* Sharing deeply personal experiences with others brought Stud5 into a liminal space, as the benefits were only recognised in hindsight.

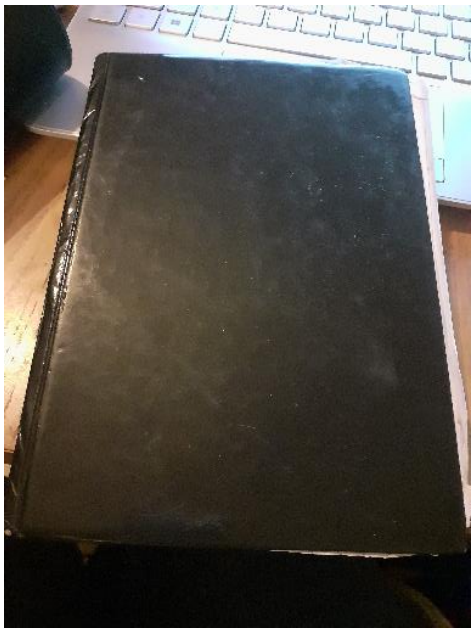

Figure 34: Stud 5: Reflective writing

Reflection (IC) was represented by a wide variety of images, as demonstrated above, and it is integral to learning to use self (TC) in the care (TC) of others (TC) in SC practice. In summary, IC difficulties included learning to reflect on dynamic dialogic movement, interconnections with other concepts such as love and non-judgement, thinking about alternative perspectives, moving beyond descriptive writing, tolerating intrusive assessments, developing self-awareness and breaking judgemental behaviours.

4.3.7.5 Self

The final TC is self, identified in image B (10) and byGrad6 and ED8B. Grad6 chose the two images below (Fig. 35) – one a photograph and the other an illustration. The photograph is categorised as everyday activity/ personal experience, challenging and a metaphor. Both images were chosen to replicate an art piece created in a self-development module in college and discussed interchangeably. The images were seascapes with a ship, sun, clouds and birds with the self as the ship, family and friends as the crew on board, the birds as deceased family members, the sea as a changing, unpredictable environment, and a journey. The birds are free to come and go, and "*you don't see them every day but they might come back into your head every now and again*". The ship and sail had "*a good base"*, were "*quite strong*" and were "*moving*

forward". The sea was then "*dark*" and a "*bit choppy*", with light and dark representing childhood. All the colours, Grad6 said, "*live in me*", and the "*light comes through me [and] I try and put a positive spin on it"*. The bright colours are the hope and aspiration to move away from the dark colours representing the IC of loss and grief.

For Grad5, troublesomeness in the development of self (TC) meant confronting family separation and its impact on her. While it was difficult acknowledging and reflecting (IC) on past traumas (IC) and bringing her "truth" into the open for examination, it improved empathic responses (IC) in practice. The difficulty was sharing this life experience with other students, as it was experienced as frightening, leading to uncomfortableness and vulnerability. Grad6 said, "*it's very hard ... It's okay to own your truth ... But getting to that stage where you can own your truth and stand tall in yourself takes a long time and a lot of work."*

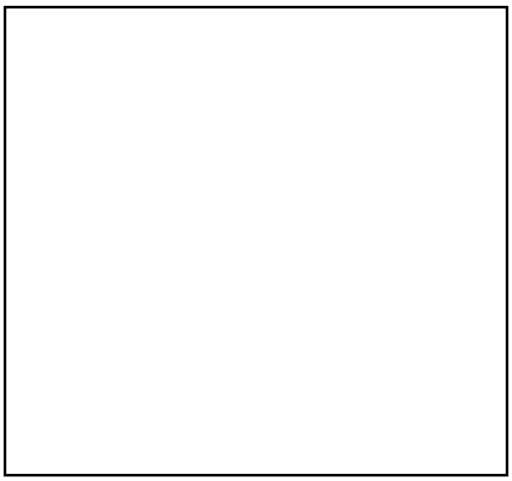

Figure 35: Grad 6. Self. These two images have been removed due to copyright restrictions.

ED8B selected an illustrative image, below (Fig. 36), with the words 'who am I' with a question mark in silhouette form with white text on a black background to represent self (TC). For ED8B, "*part of this journey of becoming a social care worker is learning about yourself and who you are and what you bring to the work*", checking unconscious biases, judgements or prejudices (IC). It is the worker's responsibility to know what "*triggers*" the "*vulnerabilities"* that *"might be their strengths*", and this requires being "*very brave*" as they are "*challenging things to really look at*" – doing

this "*opening themselves up*" in a safe way. The image's dark colour was referred to as the shadow side, and students needed to embrace it because everyone they worked with would have their shadow side. Teaching involves getting students to recognise the unconscious rescuing of others (TC), or the "*caregiver in overdrive*".

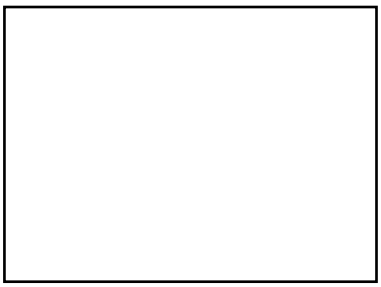

Figure 36: ED8B. Self. This image has been removed due to copyright restrictions.

Resistance to learning about the self comes from attempts to change roles established over a lifetime. Teaching involved creating a culture of openness and a slow gentle approach over the years. Again, both Grad6 and ED8B identified the TC of self as inducing a state of liminality, resulting in resistance, fear and vulnerability, and ultimately transformative change.

4.4 Evaluating Threshold Graphics: T&L and Research

This section outlines the findings related to the current use of visuals in teaching and learning (T&L) and the potential of using threshold graphics as a research method.

Educators were asked about their use of visuals in teaching, their benefits and barriers before discussing how the demonstrated 'threshold graphics' could potentially be used in teaching and research. Four said they did not use many visuals in teaching, and nine said they did. ED10B said they use images "*constantly"* as *"an image speaks louder*". The findings suggest participants found visuals beneficial and were used in four ways: (1) For *presentations* as an alternative to reading and listening, breaking up text, instead of text and relieving boredom for weary eyes; (2) For *learners* such as visual learners and people with dyslexia; (3) For *stimulus and reaction* such as to evoke, get different interpretations, generate discussion, create an impact, and for enjoyment; (4) As *learning devices* that capture concepts, develop competencies, and examine layers of meanings, as assignments, for banking information and memory recall. None of the

educators analysed the visual as a semiotic object for T&L in the classroom. Hallewell et al. (2017) also found that a minority of educators did not use visuals and had limited invitations for semiotic engagement from educators to students.

Some educators suggested visuals were not used enough, and the research experience encouraged them to use them more. ED5A said, *"I don't use them enough. Actually even doing this exercise made me think I need to do a bit more of that*." A barrier to more visual use was the lack of the "*institute's support for experiential work ... small numbers*", said ED10B. ED7A commented on their value "*for all students, not just visual learners*", which seems to indicate a learning difference based on learning styles (Nancekivell, Shah, & Gelman, 2020), a disputed and harmful theory according to Newton et al. (2017). There has not been any solid evidence that there are learners that are visual or otherwise, as educational and pedagogic practice plays a great part in students' preferences. The following section outlines the participants' evaluation of the IG method with TG.

Twenty-two participants evaluated the benefits and challenges of using the IG method with TG in teaching and learning. None of the participants had any knowledge of semiotics and they had not analysed an image previously using IG, and all recognised the process as a novel teaching approach. The findings here were similar to the benefits of visual use described above, but with several additional points. Participants suggested that TG could be a fun activity, bring relevance to a topic, generate interest and engagement, speed up learning and help to remember concepts. It could also support the teaching of distressing topics by developing reflective, empathic and emotional awareness, revealing biases and prejudges, engaging higher-level abstract concepts and an opportunity to '*arrest people's sense of the ordinary*' (ED4B) by close observation and detailing of the signs within the image.

ED4B linked to Freirean theory and said TG could "*disrupt their notion of common sense, or they're taken for granted of the social world, so a big thing for Freire".* This disruptive function links with critical thinking skills, as pointed out by Grad9 and Grad5. Both pointed to how the IG process could support critical thinking by bringing awareness of the origins and intentions of images, with Grad5 saying,

> "*I think there is great value in adding depth to critical thinking and pushing student to explore below the surface level of information gathering that book reading and traditional teaching methodologies often remain at.*"

This finding supports Lacković's (2020b) view of how educators can bring attention to and help counter uncritical interactions with visual media using semiotics.

Three participants (ED6, Grad6, Grad9) proposed that TG had the potential for deeper exploration rather than direct questions. Grad9 said, "*I suppose from seeing images you might be more triggered to mention something than if you just asked me these questions about things, I'd probably say something totally different."* Grad 9 points to how images take the viewer beyond everyday cognition and into complex triggering, perhaps a more imaginative space. This view also highlights the limits of thinking without sensory stimulation. The impact in terms of conceptual altering of the mind and application to practice is stated by Grad6 in a follow-up email saying, "*the images have stayed with me ... I found that I have referred to them in my work when reflecting on my work with the service users that I work with on a daily basis."* This view points to how the interrogation of 'image-concepts' (Lacković, 2020a, p.201) results in sign integration with the concept actively referenced to guide professional practice.

Stud3 said TG use would speed up learning as it would be "*an awful lot quicker in an environment like that whereas if you were trying to get through the same lesson without the photograph…*". They also recognised the value of breaking down a TG to help teach distressing topics, saying, "*some of the topics we cover are kind of distressing or people can react to them in strange ways. So it wouldn't hurt to bring in this like visual element and then break it down."* The visual becomes the central focus for learning rather than relieving weary eyes or breaking up the text. Grad6 said images were "*so much louder and profoundly to us*", and both ED5B and Stud2 point out how the TG could generate an empathetic response and emotional awareness, saying,

> "*…you mightn't be aware that when you see a picture of a person in a wheelchair that you feel a bit sad … it's important to be aware of that because*

otherwise you might go out and you might treat people in wheelchairs like it's a tragedy."

Grad8 pointed to the process of semiotic slowing down as permitting a focused connection with what is represented in a "*real*" way, saying,

"*…think about an eye and a nose and just go slowly and see the real pain and the real situation that's been dramatized in front of you or in the picture*' & '*because people can use words as well and begin to change their mind in a second. But if you ask them to focus on something for a while, then it becomes real and more pronounced or profound for them.*"

Therefore engagement with TG brings forth beliefs and attitudes, revealing biases and prejudges for further reflection and examination. Also, the response to slowing down may reflect the speed of media (Mihailidis, 2018) impacting on concentration (Brasel & Gips, 2011; Couldry, Livingstone, & Markham, 2007). TG can bring learners into a liminal space where TCs and ICs are confronted, requiring an affective response and eventual integration. ED16B and Grad6 said TG had the potential for reflection and personal development work. Grad6 said, "*I thought that was a great method for me to reflect ... learn and to also explain my view of the world and how I understand myself."* This finding concurs with Semetsky (2011), who stated that reading tarot images resulted in a 'better ability for self-reflection, self-knowledge, and a sense of value, purpose and meaningfulness of our experiences' (Semetsky, 2011, p.8). Stud6 also recognised how visual content related to the conceptual meaning of TCs could be uncomfortable, saying that the IG TG process can help students to "*really stop and look and see, what's going on here*".

Grad6, Grad10 and Grad8 said unpacking the photographs was a valuable exercise to "*stop*" and pay attention. Grad10 remarked how the fast world of social media resulted in uncritical scrolling compared to '*real*' photographs. They said, "w*hereas [with] an actual picture that you can hold and look at and see and, you have to stop and look at and reflect and think ... about your own biases that might be coming out to what you're looking at. Yeah. And I think it's invaluable*." Grad8 said

> "*I think people have to stop and look at them and sit down and look at a still image and forget about all the moving images. And that's when you get the real message."*

This view of uncritical social media concurs with Lacković (2020a) who states that 'one role for education may be to moderate the pace of this information exchange' (Lacković, 2020a, p.377). ED17B commented on how TG could help students see the bigger picture, and for Stud6 and ED17B, it could make connections between concepts. Again this concurs with Semetsky's (2011) assertion of the value of symbolic images in education for making links to lived experience and how social media can capture minds (Mihailidis, 2018). ED17B identifies the risk of conceptual isolation within many SC programmes, saying that TG could play a role in making connections, adding,

> "*I can see it as a way that they would be able to make, bridge some of the concepts or connections, the themes that they're talking about, in other modules and with this module*."

This view is supported by the findings that images can generate multiple interconnected concepts from one image, as stated by seven participants (ED13B, ED15B, ED2B, Grad6, Grad9, Stud3, Stud4). ED13B said,

> "*one picture could mean one thing to me and could be completely different for somebody else. And I suppose that's something that we need as lecturers to bear in mind, that people, the way people analyse or take in information or think about things, is very different. So yeah, I think it's a good process."*

The use of TG in this way would, as Taylor (2006) stated, build layers of complexity and bring 'isolated islands of knowledge' (Taylor, 2006, p.89) together. The IG process of unpacking a TG can then reveal perhaps unexpected meaning formulations and help an educator to identify gaps and shortcomings when teaching threshold concepts. The naming of elements through denotation and connotation and IG reasoning enabled the slowing down of meaning-making and a more focused attempt to understand what was particularly troublesome about the concepts. In the fast world of visual bombardment, the slow process of sign separation within the image suspends

automatic meaning-making, so that a critical stance can be deployed through such slow thinking.

Several potential challenges of using TG in T&L were identified. Eight educators (ED1B, ED3B, ED6B, ED14B, ED15B, ED7B, ED16B, ED1B, ED2B, ED4B, ED18B) said they would use TG. However, ED1B said, "*I'd probably be more methodical I'd say in how we present the images and the way you've done it."* ED2B said, "*now that we've actually gone through this exercise in the back of my head, I'm thinking God, this could be something I could use*." ED1B said, they would add a few more steps, such as asking about the origins of the meanings, and ED15B and ED16B were reluctant to change their T&L approach.

Nine participants identified challenges to using TG in T&L. ED5B said it would "*be very hard to actually to get them to settle down into actually looking at the image by its contents*". ED14B and ED16B said large groups would prevent engagement as "*some students are afraid of speaking up*". Some students also fear making "*a fool of themselves by saying something that might be perceived as wrong*". ED5B said there would be reluctance and ED14B said there would be a reaction such as "*like, what?*". Five participants raised concerns about student welfare and ethical dimensions (ED16B, ED17B, ED18B, ED2B, Stud3) with types of content needing consideration, the risks of triggering reactions and the students' stage in learning. Carefully vetting the images was suggested to keep the environment safe. Time (ED15B, ED1B) was also a factor, and ED1B perceived TG IG exploration as "*unstructured*", suggesting this would be challenging to implement.

4.4.1 Evaluation of the IG Photo-Elicitation Method 'Threshold Graphics'

This section presents the findings of evaluating the IG photo-elicitation method. To reiterate, previous research has not exploited a semiotic IG photo-elicitation method to identify TCs in social-care education or any other discipline. I will begin by offering observations on the interview experience and photo-elicitation method using 'threshold graphics', followed by the participant findings. The research began with a pilot study with nine educators and four graduates, and I was learning about semiotics, edusemiotics and the IG framework. Many early interviews in the pilot study did not

ask participants to unpack images using semiotic reasoning. The signs within the images were unexplored; therefore, deeper analysis from a conceptual perspective was limited, compared to later IG use. In these instances, the image was an adjunct to what participants said about uncomfortable and troublesome learning, rather than a focus for close semiotic exploration.

These interviews tended to be shorter, and while the data were relevant, it was clear from the follow-on interviews how the IG unpacking process involved the participants into a more profound, thought-provoking process. Consequently, participants in the pilot tended to have predetermined answers (participant images) or named the first thing that came to mind (researcher images). On the other hand, the IG process was advantageous as the participants could begin to connect the identified signs to their conceptual knowledge, creating a semiotic logic in their minds. Some were surprised at the meanings that emerged through this process.

Since none of the participants had participated in photo-elicitation research before, except for an educator who had used pre-printed images in their research, IG photo-elicitation was new to them. Eight participants commented on the IG photo-elicitation methodology, saying it was an interesting method. It evoked conversation and feelings and was valuable for accessing information and different responses. However, Grad5 said,

> "*some elements of the unpacking that I guess I was a little unclear as to the reasoning behind, but it evoked curiosity as opposed to resistance*."

This lack of clarity may be due to explaining the IG framework as an interview sequence, but not the semiotic theory underpinning it.

Grad8 pointed out the difference in how generations might view images, with photographs meaning much more to older people. It was an underdeveloped theme. This view perhaps pointed to perceptions of images as having sentimental and reminiscence value for older generations, rather than the instant and fleeting images of the modern world that the students consume at an ever faster pace.

Twelve participants commented on the process of choosing an image. Four participants spent time looking for a suitable image; two said they did it quickly and it was a *'gut instinct'* (ED18B). Three had difficulty in finding a suitable image. Two participants had opposing reactions; ED11B said they enjoyed the process while ED16B said,

> *"Awful, I hated it last night, 'oh Jesus what the fuck', sorry about my language. It was my first reaction."*

ED15B chose Internet images as smartphone photographs contravened their ideological position regarding Internet privacy. ED18B chose an image from among old personal photos, and ED15B used it to teach troublesome concepts,

> *"…here's two and these are the concepts students find troublesome. So I selected the photographs largely from what I had, largely on the idea that this was about troublesome concepts."*

Grad7 said the process helped them reflect, Stud4 said it reminded them of a visual analysis exercise in college, and ED16B said it helped remind them of the what, how and why they teach particular concepts,

> *"And I got into it really quickly and I was delighted I spend ages scrolling through and it really helps me to, to get back into that headspace of what do I want to do? What do I do? Because it's amazing. I mean, I'm teaching all this for 18 years and I've done that, but even so, when you're away from it for a little while, you forget 'what you do' and 'how you do it' and what's your purpose behind ... I really had to remind myself."*

This exercise points to the value of educators searching for images to represent concepts. The process from searching or taking a photograph to the IG analysis of TG highlighted pertinent pedagogical questions and concerns for educators perhaps previously overlooked.

4.4.2 Process of Unpacking in Interviews

This section presents the findings of participants' responses to the process of unpacking the images in interviews. There were three themes: provoking, positives and challenges, and I offer an overview here.

Under the provoking theme, five said it slowed down thinking by referencing social media as a fast, often impulsive, method of communication. Stud2 said,

> "*I feel like it makes you think about what you're seeing and what you're feeling in, it's kind of a slowed down way, which is good, because then you can really process it, you can process the image and you can process your reaction to it, and understand it better.*"

It provoked thinking for ED2B,

> *"...because you're thinking about what you're looking at. And for someone who normally thinks in words, it was actually a very effective way of, of figuring out what I was thinking about things.*"

Five participants said they engaged in empathic dialogue through self-reflection, to "*get in to feel somebody else's mind, to feel what's going on*" said Stud6, referring to image B. In support, Grad8 said the process prompted self-questioning about initial reactions to the image. Participants said the process helped them focus, notice details, make connections, recognise multi-dimensional functionality, suspend judgement, cultivate ideas, recognise interpretations from personal experiences and move beyond quick responses to deep analysis.

The interviews were inspiring, enjoyable and a valuable experience, with other positives such as the structured pattern of questions and getting past the,

> "*assumed authority of words on the printed page which we're very keen on in our culture and we think learning is about amassing that, now it is that as well of course, that's important."* (ED4B)

Some challenges were offering a brief description without detailed meaning, repetitive questions, a preference for words, holding back detailed and spontaneous meaning-making.

4.5 Summary of Findings

This unique research with 45 students, educators and graduates visualised conceptual troublesomeness using the IG photo elicitation method. It offers insights into what and how integral concepts (ICs) form a 'threshold rhizome' with the identified TCs. From the findings, I propose the dominant TC of Self-Other, discussed further on, arising from the principal TCs of theorising self (TC) and interpersonal relationships with others (TC) in care work (TC). Indeed wanting to help others based on life experiences motivated SCWs. Troublesomeness originated from concepts either too far, too close or idealised, teaching approaches, troublesome skills and interpersonal student interactions. A wide variety of teaching activities were challenging for students, while educators were cognisant of the potential of triggering unpleasant experiences in large classrooms without support.

The 'threshold graphics' IG photo-elicitation method replicated a student-oriented teaching and learning interaction for evaluation and demonstrated how participant-selected images functioned effectively as semiotic devices to reveal convergent and divergent TCs and ICs. The threshold graphics of A, B, C and D effectively identified and opened up discussion on various troublesome ICs and TCs, and emotional and action-based reactions. In addition, conceptual knowledge gaps were noted when non-SC educators could not identify SC concepts. Signs were interpreted broadly, underlining how versatile = threshold graphics is in accessing meaning-making processes by connecting imaginatively and creatively with experiences. There was low use of visuals in teaching by some educators; however, the challenges, benefits and potential for increased visual and threshold graphics use were strongly acknowledged for learning troublesome concepts and critical thinking.

The image-concepts analysis of the participant-provided photographs revealed preferences towards representing concepts with *everyday activity/ personal experiences* in a *place/ context*. Representations of image-concepts were also a

challenge, had *metaphorical* intentions, *cause/ prerequisite* conditions and *outcomes* with *time/ historical* significance. The *culture* of representation was least utilised. Semiotic element analysis in all the images showed people featured strongly, correlating with the SC profession's focus on self and relationships with others.

This innovative research exploited a semiotic IG photo-elicitation method to identify TCs not previously undertaken in social-care education or any other discipline. Comparisons between non-IG and IG photo-elicitation methods point to less reflective engagement. The IG process slowed noticing and thinking down, increasing opportunities for making connections and critical formulation of conceptual meanings related to SC. Training in the IG photo-elicitation method would ensure effective deployment.

Chapter 5: Discussion

5.1 Introduction

First, to restate, this research contributes to knowledge by conducting (1) the first in-depth TC research in Irish social care to include students, graduates and educators (knowledge contributors), to inform SC education and provide the basis for further research. (2) Second, it does so in a way that has also not been done before in general social-care education by employing an innovative IG photo-elicitation method and 'threshold graphics' approach (Lackovic, 2020a) to explore learning concepts in social care with images, or, in other words, to 'unpack' images by linking specific signs to meanings, revealing further avenues of focused conceptual questioning, insight and analysis. (3) Third, as both researcher- and participant-provided images were evaluated as 'threshold graphics' for teaching TCs as a novel research method, interview was both a method for data collection and an evaluative demonstration of threshold graphics' potential as pedagogy.

5.2 Context: Motivation For Undertaking an SC Degree

The participants' decision to complete an SC degree was driven by wanting to help, having had experiences with a family member with disabilities, death, caring duties or community work. Strong motivation can benefit learning threshold concepts (Davis & Green, 2020; Francis, 2018; Male & Bennett, 2015; Mosurinjohn, 2021). However, the

desire to help may sometimes present as wanting to fix (IC) and care (TC) *for* others (TC), rather than empower them, perhaps meeting personal needs. Concepts such as empathy (IC), non-judgement and empowerment require teaching often counter-intuitive perspectives on what it means 'to care', and how to practise it, i.e. helping can often mean stepping back. The findings also suggest learners transform during their SC programme. The learner changes their layperson views and attitudes built on a simplistic understanding of concepts to using professional language, from simplistic black-and-white thinking to recognising grey conceptual complexity, from a baseline motivation to help and 'changing the world' or 'fixing people', to one of balancing empowerment, acceptance and non-judgement.

5.3 'Threshold Concepts (TC)' Identified within Social Care Subjects

This research revealed the characteristics and types of threshold concepts experienced, identified and reflected upon. As stated in the findings section, 12 TCs were identified under four thematic fields with 80 interlinked ICs (Table 8). Although TC research is challenging (O'Donnell, 2010; Rowbottom, 2007), the strength of this research lies in its focus on troublesomeness (Stopford, 2021) to identify TCs and the inclusion of a substantial number of participants, albeit in unequal numbers, with experience of research, teaching and learning concepts in SC. The troublesomeness of concepts, viewed here as having a cognitive (Land, 2016) and emotional impact (Rattray, 2016), was treated as a significant indicator of a TC. The findings suggest an intertwining rhizomatic structure of ICs linked to dominant TCs. The TCs (and their linked ICs) identified here clearly demonstrate the variation in troublesome responses that were either too abstract (too far), without an anchor to existential realities, or prompted troubling (too close) experiential/ embodied/ sensed responses.

ICs were found to be rhizomatic (Semetsky, 2007b) as they connected to overarching TCs, suggesting multiple ICs are involved in crossing the threshold for conceptual understanding and '*becoming*' (Semetsky, 2007b, p.199). Although categorised in a tabular format, ICs and TCs are integrative in line with threshold theory (Land et al., 2016b), and from a rhizomatic perspective they are also understood to be part of larger SC conceptual 'episteme' (Perkins, 2006, p.43). I demonstrate this interconnectedness through threshold graphics using an example called the 'threshold

rhizome' (TR) in the findings (Fig. 6: Self & Care TCs). The TR was based on Lacković's (2020a) IG rhizome '"ACE" (abstract–concrete elaboration) thinking processes model (Lacković, 2020a, p.361). Each image-concept was then a 'threshold graphic' representing reflection, empathy, situating self in people's experiences, self-care and blind spots linked to how the self (TC) is used in the care (TC) of others (TC). Each IC is capable of contributing to the formation of the TC. The 'threshold rhizome' (TR) makes this explicit through visualising troublesomeness, using threshold graphics, revealing this conceptual network in action. It also reveals, via visual signs, the continuous 'concept expansion' (Lacković, 2020a, pp.281) taking place in conceptual learning. The following sections will discuss some of the convergent and divergent ICs outlined in the findings section.

Several ICs were convergent across all groups, using all the images linked to the TCs. Understanding traumatic events (TC) such as domestic violence, silencing, sexual assault, abuse, and harm (self and other), social justice (TC), institutionalisation and advocacy were dominant and demonstrated how concepts were rhizomatic (Deleuze & Guattari, 1987). The rhizoid system implied non-linear growth and interconnected learning through different signs, such as language and images. Troublesomeness was linked to emotions of fear, anger and helplessness, understanding trauma's impact on self and others, managing behaviour, the historical evolution of care and social care's non-judgemental engagement with both victims and perpetrators. The use of self (TC) in the care (TC) of others (TC) in SC practice converged on the troublesomeness of how to engage empathically by reflecting on the self and other through professional supervision. Indeed the findings confirm those of Bogue (2004), who points to 'a disruptive event that compels thought into action' (Bogue, 2004, pp.328). With reference to Gilligan's (1977) caring transitions, Clouder (2005b) states that 'going through the caring threshold has something to do with being touched personally by events so that students connect with those for whom they care as a human being' (Clouder, 2005b, p.512). Troublesomeness deepened and expanded conceptual understanding uniquely for each person within their semiosphere (Lotman, 1990) or Umwelt (von Uexküll, 1909).

Teamwork was troublesome due to the dynamics of interdisciplinary work and was linked to theorising care work and management (TC). Fortune et al. (2014) also recognise teamwork as a TC barrier to learning. Understanding unique presentations of mental illness, from the perspective of the self having a rational mind or without direct experience, and maintaining good mental health was linked to theorising health and illness/ wellness (TC). These convergences demonstrate the troublesomeness of working with other professionals and the use of self to engage with individuals impacted by complex family circumstances, health and sociocultural factors, both with and without similar experiences.

The findings suggest TCs bring the learner into a space where assumed facts about self and others in society challenge existential certainties (Shulman, 2005), thus bringing troublesomeness. This view concurs with Steckley (2020b), who found relational practice and use of self as dominant TCs in Canadian residential childcare. The TCs and their interlinked ICs identified here demonstrate how SC education has many points of uncertainty and troublesomeness. Learners' certainties then need to shift, requiring integration (or at least co-existence). Examples include religious beliefs (e.g. 10 commandments) conflicting with theories of society (TC) (rules created for social cohesion), idealised certainties about people (capable of abusing others and *both* victim and abuser requiring social care/ non-judgemental stance) and idealised family life (TC) (traditional and alternative) based on experience. Challenging established concepts can conflict with the new, bringing unresolved and uncomfortable instability, such as the cognitive dissidence of social theories of power and religious belief. Overcoming conceptual troublesomeness then requires a close examination of the sociocultural foundations of the self, the care of others and how concepts are practised. This stance can bring conflict and challenges to *both* educators and students and also acknowledges idealised conceptual theories that fall short in reality, e.g. person-centred approach (IC) or modern institutional (IC) care (older people). The IC reflection challenged some learners' certainties (Shulman, 2005) about the hidden self or blind spots (IC), which is important in decreasing the risk of detachment and improper care. Exploring and sharing aspects of the self was uncomfortable as it exposed vulnerabilities when private worlds became public or abstracted due to

descriptive writing that did not reveal the self. From a semiotic perspective, Semetsky (2016b) states that 'self-knowledge as a relation to oneself is a prerogative of edusemiotics and is a prerequisite for knowing others' (Semetsky, 2016b, p.8), and notes its impossibility without self-reflection. To 'step into' other people's vulnerability, the learner needs to experience their own entirely. As Clouder (2005b) states, recognising the needs of others involves 'good self-knowledge ... and attentiveness to one's own needs for care is a primary consideration' (Clouder, 2005b, p.515).

Divergent ICs were identified by educators, graduates and students with links to the overall TCs. Examples included abstract ICs (too far) related to the doctrine of precedent linked to understanding legally regulated societies (TC and Karl Marx's conflict theory linked to theorising society (TC). Physical activity (IC), linked to theorising and implementing interventions (TC), was also abstract, requiring reconceptualisation due to experiences, both positive and negative, of physical education. Dysfunctional child roles, linked to theorising the person within the family (TC), resonated strongly (too close) with a learner who suddenly realised their behaviour was linked to family traumas. The IC family systems theory (shadows) prompted a similar response by bringing awareness to how significant family events and traumas impact on families. Teaching TCs is aided by active engagement with uncomfortable learning by focusing on the self and others within a safe meaning-making space. I propose that encounters with ICs bring learners into a liminal space before achieving TCs.

Creativity and the arts (IC) were found to be convergent, concurring with the TC in art and design (Reid & Solomonides, 2007). However, creativity in SC is about relationships and process-focused activities rather than products (Mac Giolla Rí, 2020). The difficulty was in helping students let go of 'artistic' misconceptions and learning to value personal creativity. Allen (2014) comes close to the SC's concept of creativity by suggesting 'liminality as an authentic creative space for learners and teachers, a space for unknowing and unlearning, a disorienting and productive space' (Allen, 2014, p.31).

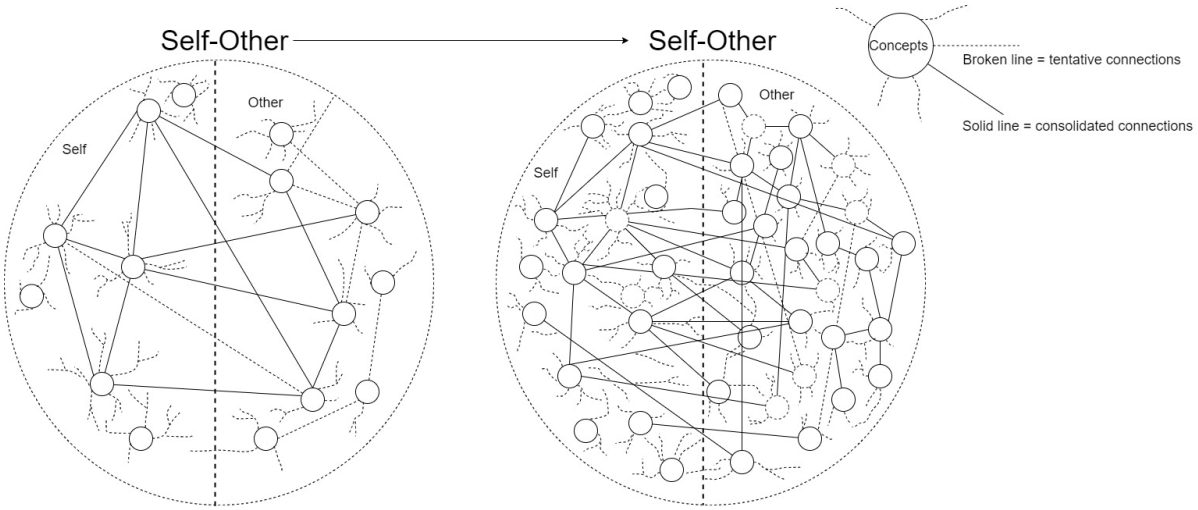

Figure 37: The author's image of rhizomatic TCs 'self' in relation to 'other' interconnecting over time

Based on the findings, learning to be a social-care worker involves 'getting to know' (Farquhar & Fitzsimons, 2016, p.166) the self in relation to others to meet their care needs via the identified TCs. I build on Lacković's (2020a) IG rhizome '"ACE" (abstract–concrete elaboration) thinking processes model (Lacković, 2020a, p.361) by demonstrating how the TCs of self and other intertwine to form a self-other concept within the rhizomatic (Deleuze & Guattari, 1987) TCs structure (see Fig. 36), represented as a continuous 'concept expansion' (Lacković, 2020a, p.281). In line with Peirce, what is presented here is a process of learning 'know-how' and 'knowledge' as the outcome (Danesi, 2009, p.viii). The self-other can then continuously re-conceptualise, in this case via learning through threshold graphics, to accommodate the unfolding and revealing of self and what is and can be known about the other.

According to Bogue (2004), conceptual signs within and including the self-other are 'unfolded' (Bogue, 2004, p.327) as a formation process, represented above (Fig. 36) by broken lines. Fixed concepts represented by solid lines provide certainty (Wittgenstein, 1969), for, without them, nothing stable can exist. However, fixed concepts can become unstable and troublesome when certainty is undermined. From a rhizomatic perspective, all these concepts can decay, with new roots and connections formed in their place from their residue. The *residue* introduced here as a metaphor means having remnants of the past influencing conceptualisation, reflecting Blunden's (2012) articulation that concepts are embodied with meanings originating in the past.

The ICs of caring for others then involve turning the spotlight outwards to learn the concepts that affect people collectively and individually within society and how to help. Similarly, McAllister (2015) in nursing education identifies awareness of the '"Other" in relation to self' (McAllister et al., 2015, p.551) as critical for learning professional care. The other concept cannot function without the self. For example, the TC of empathy (Donovan et al., 2013) and situating self in people's experiences is a semiotic process bringing concepts such as domestic violence, social constructivism (Thomas, 2019), harm and ethics into the student's Umwelt. Difficulties are then semiotically distinct, with some students struggling to connect and resonate strongly with others, depending on the concept. The other concept is an object through which the self, the interpreter, can empathise, understand via theory and find ways to help. Consequently, learning TCs and ICs cannot be achieved without a troublesome and disruptive interaction based on dynamic decay and growth between and within the concept of self-other.

5.3.1 Integral Concepts: The Troublesomeness of Concepts

Based on the ICs and TCs identified, troublesomeness was classified into three categories: theoretical/abstract (too far), experiential/embodied/sensed (too close) and T&L approach (see Fig. 6). The theoretical/abstract and experiential/ embodied/ sensed categories are influenced by multimodality (Archer & Breuer, 2016) and edusemiotics (Olteanu & Campbell, 2018), recognising knowledge as embodied (Lacković & Olteanu, 2021; Lakoff & Johnson, 1980). As we all interpret concepts based on our Umwelt, informed by experience, these TCs and ICs can be uniquely troublesome for each learner.

Theoretical/ abstract troublesomeness (too far) centred on concepts that remained outside until connections are established, such as ICs of intersectionality and policy, both social and political, impacting on, for example, housing and segregated communities. Contradictions can emerge, such as participants having no difficulty caring for those with disabilities, but judgements hindered the unconditional acceptance of perpetrators of abuse or foreign nationals. Also, there may be a failure to link to and integrate other ICs such as power, rights, advocacy and ecology, resulting in lopsided perspectives and mimicry. Failure to cross these thresholds results in

judgemental attitudes and bias (IC), due to not combining the IC 'head, heart and hand' (ED8B), resulting in improper care (TC). Also, abstract theoretical concepts were troublesome when idealised expectations were not fully realised in practice. Examples include the general acceptance of workplace violence, a systemic failure to respond to abuse allegations and person-centred planning dictated by financial considerations. Failure here can result in the concept being rejected as an ideal and not worth pursuing in practice.

Experiential/ embodied/ sensed (too close) troublesomeness arises from concepts that the self experiences in new, unexpected and uncomfortable ways. These ICs are embodied with fight/ flight reactions and emotions of anger, sadness and frustration, and it takes time to unpack them and tease out their significance. Failure here can include defensive behaviours, such as arguing, blaming, rejection, enmeshment, over-involvement and objectifying the other by pitying.

Troublesomeness can also emerge from clumsy, unsafe and disrespectful handling of concepts in teaching, as the communication accompanying signification can become distorted. For example, there was disagreement on how humour could lighten the mood or demean the topic of abuse. In this case, the student needed to work harder to detach and construct the concept in their own way. Failure can result in learners needing to untangle the educator's perspective and treatment of the concept from how they or the broader profession conceptualise it. French was an outlier as it was challenging to learn and had no relevance to SC practice.

5.3.2 Teaching-Learning as Applied and Experienced By Participants

Mirroring the importance of relationships in SC, relational teaching methods such as using stories to teach students about abuse, addiction and mental health issues were strongly evident. This teaching approach helped the learner step into the world of the other (IC), bridging theoretical and experiential Umwelts and permitting ruptures to certainties. This finding concurs with Smith-Shank (2010), who suggests that 'semiotically astute teachers tell stories and spin interpretants that guide their students to further exploration' (Smith-Shank, 2010, p.257). Conceptual knowledge is then co-constructed within a semiotic space for 'free discovery' (Olteanu, 2015, p.48)

by opening the self to possibilities and uncertainty, both educator and student can engage with alternative perspectives about the other.

Semiotic co-construction of conceptual knowledge is not a one-way process, as each person, including the educator, brings their Umwelt into 'dialogue' with new signs and sign systems (Stables, 2016, p.vii). Lacković et al. (2020) agree and argue that sign learning needs to be 'relational by promoting a sense of connectedness to others and the environment' (Lacković & Olteanu, 2021, p.4). The SC classroom is, then, required to respond by actively connecting the self with the other through the lens of history, the present, the future, theory and practice. This is where pictorial images can act as connective signs or 'semiotic bridges' (Semetsky, 2019, p.3) for learning. Concepts, to use the rhizomatic metaphor, link to other signs they require to function at that time. For example, ICs such as racism and feminism continuously evolve and interconnect with TCs such as social justice and the IC of power, with hopes and ideals for the future. Without resonating with what has gone before, bringing together what is in the present and what is possible in the future, concepts become meaningless and impotent.

When the focus turns inwards, onto the self, ICs of family systems theory, loss, race, ethnicity, gender, mental health and vulnerability link to TCs capable of transformative change. The challenge of this transformation lies in how the student breaks the 'habits of thinking and habits of acting' for conceptual insight in practice (Semetsky, 2016b, p.6). For example, Stud3 used an attachment theory illustration to contrast their ideal childhood with children who had experienced abuse, bringing profound sadness and highlighting the frustrations of SC work. The past could not 'be fixed', yet SC work could, through small interactions, lay the groundwork for change sometime in the future. This continuous re-conception of the other through TCs transforms the self profoundly and irreversibly. From this perspective, learning cannot be about imparting mere facts into students' minds, it must be a living process of relational engagement. Troublesomeness can also emerge from an attempt to separate the professional self from the personal, cognitive dissonance. For example, McAllister (2015) suggests using a creative approach to 'differentiate personal from professional values' (McAllister et

al., 2015, pp.549). I suggest this is a contradiction in semiotic pedagogy and is to be avoided.

In discussing TCs in nursing, McAllister (2015) suggests that Mezirow's (2000) transformative learning (TL) pedagogy assists in challenging thinking by calling 'into question taken-for-granted ideas, beliefs, habits of mind and feelings, and to experience fundamental shifts in perspective so that they can join colleagues in committed actions for change' (McAllister et al., 2015, p.549). Along this line of thinking, from an edusemiotic perspective, Smith-Shank (2010) posits that 'it is only when our habits are disrupted to the point that we are uncomfortable with the status quo, that we are motivated to reassess our previous beliefs and habits' (Smith-Shank, 2010, p.250). Therefore, disruption of the embodied known is necessary for transformative learning.

A detached teaching style of delivery may produce conceptual sign knowledge, but the learner needs to work harder to integrate it successfully into their Umwelt (von Uexküll, 1909). Otherwise, it is disconnected from other concepts, inducing mimicry. The rhizomatic metaphor introduced earlier suggests that concepts can also remain at the end point of the root, as isolated knowledge, until a future event forces a 'conceptual expansion' (Lacković, 2020a, p.281). For example, psychological terminology learned by rote in year one found relevance and application only later, after graduation. The simplifying of psychological language was an educator's dilemma, risking dilution of its conceptual integrity. ICs and TCs may lie dormant in pre-liminality (Meyer et al., 2010) until they suddenly connect with other ICs and TCs later.

Approximating learning within a narrow sphere of understanding and application to practice is a complex process for educators. As Semetsky (2016b) states, educators can limit learning to a mere '*product*' by adhering to 'binary opposites' of right and wrong without engaging in a participative learning process (Semetsky, 2016b, p.7, italics in original). SC education may need to take account of these individual differences that arise through troublesome knowledge. As presented here, the responses to the TG were rich and varied. Educators may need to accept variations in interpretations if the

concept is broadly in line with professional practice and values. To conclude, there are five points related to T&L ICs and TCs here. The need to (1) focus on the self-other TC as a dominant feature of SC learning, (2) recognise ICs as interconnected with other ICs and TCs to avoid isolated knowledge, (3) take account of the learner's experience and stage, (4) use semiotic devices such as TG to access troublesome learning (5) and establish safe spaces that promote and tolerate troublesome complexity and variations in interpretations, leading to integration and threshold crossing.

5.4 Use And Evaluation of Threshold Graphics (TG) Based On Its Key Ingredient – IG

This section discusses the uses and evaluation of 'inquiry graphics' (IG) to T&L threshold concepts with 'threshold graphics' and how ICs link to TCs as threshold graphics from a semiotic perspective. The previous section demonstrates how ICs contribute to the formation of TCs within a rhizomatic network. This points to conceptual flexibility as concepts straddle personal Umwelts and operate collectively in SC education. Learning troublesome concepts, as semiotic constructs, then involves bringing these Umwelts into relation with each other to advance meaning-making for knowledge. The findings also show the potential of 'inquiry graphics (IG) with threshold graphics as image-concepts as a teaching-learning method to reveal and connect these semiotic worlds for further examination and clarification.

Many educators used multimedia resources and visuals, albeit in a limited way and evaluated IG with threshold graphics, as a welcome and innovative approach in T&L. However, challenges included resistance based on describing visuals as teaching aids rather than standalone learning artefacts for critical analysis. This stance was expected without prior experience of this novel approach.

Responses from the participants showed how the exercise required slowing down to focus and conduct an in-depth analysis, going beyond automatic responses. Some found this challenging, concurring with Lacković et al.'s (2020) findings that 'interpreters/ learners jump to the image's holistic connotative meaning, without paying closer attention to image details and how these can inspire conceptual reflection' (Lacković & Olteanu, 2020, p.11). The reason behind this might be simply

the lack of encouragement that learners experience in their education to analyse images and inquire into them deeply for concept learning. Therefore, it is hard to establish image content as the basis for conceptual reflection, which is something that needs to be communicated by teachers in order to encourage such uncommon abductive reasoning as a key quality of deep thinking and learning. Lacković et al. (2020) also recognise the value of pushing past the obvious into the unknown for critical engagement. As some interviews took place during the COVID-19 lockdown, there was a general openness to trying methods applied online. I discuss TG (threshold graphics) as an approach in the following section.

The challenges to using TG in T&L were a lack of time, pre-set and routinely adopted methods, ethics and large groups of students. While one educator said TG was adaptable and could be integrated with their teaching, others said learning a new method was time-consuming and not as useful as tried and tested teaching approaches. A potential solution may involve one-to-one instruction with adaptations to suit pedagogical goals. The IG unpacking process forced a suspension of automatic thinking, replaced by a questioning stance such as 'what do I know about this?'. This phenomenon presented as wanting to give the 'right answer', and two discipline-specific educators could not identify more general SC concepts. This points to the value of IG analysis in identifying gaps in knowledge for educators and learners with possible isolated islands of knowledge unintentionally created by SC educators. To use Stable's (2010) words, 'time does not stop to allow for analysis of every situation'; however, I propose that IG with photographs as TG activities does offer provisional stability or 'a vantage point' (Stables, 2010, p.26). Meanings can then be unpacked to reveal conceptual relations that oppose mind-body dualism by not excluding emotions, thoughts and physical responses (Stables, 2010).

Ethical concerns were raised about managing troublesome reactions to troublesome images in large group settings, as some images may be perceived as offensive and upsetting. However, the necessity of troublesomeness was pointed out by ED16B, who said: "*If a social care practitioner can't be in the room with the discussion or a picture, then they certainly aren't going to be able to be in the room with a client who brings the issue to the fore*." ED2 suggested, "*It's about educating your students about how it*

is okay to feel like this, it is okay to have a reaction, it is okay to feel emotional impact about something." Smaller groups were suggested here as best practice to meet these safeguarding requirements. However, further exploration is required to foster conceptual growth of the self safely.

Efforts to introduce TG in teaching, if only once as a programme development exercise, could still prove beneficial. This is because teaching TCs such as self and care of other could be enhanced by bringing signs to the fore using TG, for both construction and deconstruction. This dialogue between the semiotic elements presented and their conception was effective in drawing out embodied knowledge and revealing gaps. TG could have a significant role in SC education as it brought the self into relation with signs, such as others, that are ordinarily outside their realm, to build complexity (Lacković & Olteanu, 2020). Therefore TG has the potential to connect the embodied self with the other via signs for meaning-making and learning (Lacković & Olteanu, 2020). For example, unpacking TG reveals emotions and actions emerging from bias and prejudice towards ethnic groups, older people and those in wheelchairs. Lacković (2020a) also found searching for images online exposed stereotypes, biases and prejudices. Facing these biases, deeply ingrained in the media and seeping into everyone's consciousness, is an essential part of SC learning, albeit not very pleasant. There is also the danger of passively accepting the message of images. As Smith-Shank (2010) states, 'perceptions grow and develop without conscious attention to content and context, and responses to visual input are often thoughtless reflexes' (Smith-Shank, 2010, p.255).

The argument above demonstrates the value of focusing, interrogating and questioning image-concepts presented as 'threshold graphics' (Lacković, 2020a, p.142) within education to reveal the troublesome heterogeneous sign meanings between self and other and the rhizomatic sociocultural Umwelt from which they emerge. Concepts are thus created and recreated (Deleuze & Guattari, 1994) via a dynamic, if, at times, it involves the troublesome process of opening up semiotic engagement with perhaps taken-for-granted realities and ingrained habits. Certainties shatter as a rhizomatic interconnected network emerges for ongoing conceptual interpretation, multiplication and intensification, leading to becoming-other (Semetsky, 2007b). In

support of image use to make known the self-other concept discussed earlier, Semetsky (2013) proposes a semiotic approach to image symbolism developed and passed on through centuries to cultivate a 'caring attitude' contributing to the 'survival of the species' (Semetsky, 2013, p.5) by sharing values.

TG also accommodates multiple interpretations of the same concepts based on each student's unique Umwelt. The creative connection between what is 'out there' and in our minds offers possibilities for re-conception and becoming. TG can provide a safe virtual space based on iconic signs to project ideas and thoughts, working through difficulties related to concepts before actual encounters in the future. Responses then become known and reflected on, spurring potential change. This stance resonates with a participant who criticised the limits of self-refection by not focusing more on others and social inequalities, possibly further alienating the marginalised. Also, a participant in a follow-up email remembered the image-concepts in response to practice long after the interview. I argue that the IG analysis process delves deep into knowing capacities, connecting with the self for conceptual integration with the learner's Umwelt, guiding future practice.

There were different affordances in how the images were interacted with. The paper photograph was touched, and time was spent looking very closely at the detail. The virtual was viewed on various screen sizes – and poor quality resolution, when it happened, may have impeded the viewing process. Could paper-based interaction provide stability not experienced in electronic photographic production? A possibility given one participant's remark that the paper image could not be liked, swiped, clicked or deleted in automatic mode compared to social media interaction (Lackovic, 2020). Again, embodied interactions with the materiality of the 2D image may have been adapted due to the 'demands' of digital media (Campbell, Lacković, & Olteanu, 2021, p.14). This argument may have implications for classroom-based work with varying responses to an image projected onto a screen, viewed and touched on a smartphone or handed out to each student. In addition, inclusion and accommodation for those with visual impairments using advanced technology (Moshtael, Aslam, Underwood, & Dhillon, 2015) may need to be considered. such as adaptive enhancement (Peli & Woods, 2009) and alternative sensory modes (Eagleman, 2021; Pun, Roth, Bologna,

Moustakas, & Tzovaras, 2007). Accommodating multimodal expressions is also relevant; for example, Stud3 suggested the conceptual representation in a musical mode as this was their expressive preference. These areas require further investigation in order to expand the field of TG.

5.4.1 The IG (photo) elicitation research method

The research method undertaken here was the unique fusion of photo-elicitation, semiotics and inquiry graphics within a semi-structured interview. It can be said that it is an inquiry graphics elicitation method. The photographs were elevated as visual devices to elicit meaning and identify, via semiotic IG analysis, what sociocultural and personal signs were seen in these visual devices. The images facilitated and indeed supported unique and diverse perspectives by asking participants to find or take photographs and respond to the researcher's images. As Lacković (2020a) points out, this avoided the fallacy of expecting singular fixed meanings from a diverse group of people in classical methods where the teacher or researcher may ask a question or explain something. expecting that the students or participants will all interpret it in the same way. Based on the responses from participants and my reflective observation, I can conclude that the method effectively elicited subconsciously held views and experiences, slowed down automatic meaning processes by focusing on image details and moved to more complex individualised meaning-making and critical reflection on the concept. Meanings were often interpreted as personally embodied by triggering 'below the surface' emotions and potential actions related to troublesome conceptual learning and knowledge. Participants also had time to reflect on their imagery choice before the interview. The focus on the photographs in the interview was less intrusive than focusing on the person. In that way, images may have a specific advantage in diverting the focus away from the speaker, allowing for spontaneous and "genuine" interpretation and conversation flow. The participants felt prepared. As the study was both an evaluative process and a data collection method, participants could quickly envision and learn how TG might function in the classroom and research, with the majority responding positively. Therefore, the IG photo-elicitation interview was an evaluative analysis event that supported participant opinion diversity (Creighton et al., 2018), empowerment (Copes, Tchoula, Brookman, & Ragland, 2018) and inclusion

(Bates, McCann, Kaye, & Taylor, 2017), and produced rich data through specific semiotic details and descriptions provided by the participants.

5.4.2 Overcoming the Liminality of TCs using TG

Land (2014) suggests that liminality is a vague concept. Indeed, it is. A perspective based on semiotic theory is offered here. Knowing is a unique semiotic interaction between what is collectively agreed upon and personally experienced, both changing over time. Therefore conceptual construction is ongoing, and learning is a continuous *liminal* process rather than a place of arrival. In that sense, liminality is always part of learning and not necessarily something that needs to be overcome to reach the stability of knowledge. Instead, there are moments of stability, but as knowledge grows, there are always liminal moments. I argue that liminality needs to be embraced in teaching-learning so that students also feel more at ease when they struggle, as this is "normal", rather than expecting that learning will be smooth sailing. As Stables states (2016), 'learning is always a form of both discovery and disillusionment, as that which was held to be so can no longer be so assumed' (Stables, 2016, p.vii). As concepts link to sociocultural histories (Blunden, 2012), TG can reveal sign knowledge originating from the past, as seen in this research, e.g. IC institutional care linked to family histories. I propose here that TG can, by using its imaginative capacities, bring the learner into a liminal creative space where signs can be played with to create meaning.

I propose that even when TCs are achieved, they are provisional, as some liminality persists. This is because concepts are not fixed but *living* entities or signs emerging from each person's Umwelt in connection with others (Stables, 2016). As discussed in the previous section, troublesomeness arises when these concepts intersect and when fixed conceptual understandings come under pressure and break apart to accommodate new perspectives. Conceptual intersections are, therefore, liminal and teaching must challenge fixed thinking. For example, racism, an IC identified here, has recently been linked with BLM, and colonialism with other dimensions backgrounded currently. It is suggested here that TCs require an ongoing liminal open mindset to keep those concepts *alive* and evolving in professional work. This is in agreement with an art school lecturer, quoted in Land et al. (2014), who suggested the creative

potential of the liminal space for fluidity and keeping many possibilities open and available. In reference to Deleuze, Bogue et al. (2010) state that 'every sign has something enfolded within it, something "other", that, is a matter of "explicating" or unfolding ... that which is "implicated", or enfolded' (Bogue & Semetsky, 2010, p.118). The TG can operate as an unfolding device for revealing perhaps opposing and hidden umwelts.

There are two points, integration and individuality, related to TG use. From the perspective of integration, text definitions of concepts may provide the grounding for conceptual understanding that can remain as text-based objects, mimicking knowledge and lacking interaction with the student's Umwelt of operational signs. Also, failure to build on 'collateral experience' (Smith-Shank, 2010, p.250) leaves learners groundless. TG can help to unpack definitions and such like, by linking to experience and finding gaps.

Learners are then unique individuals who engage and construct reality based on the signs they encounter. For example, abuse will be uniquely constructed depending on the learner's experience and imagined future in conjunction with concepts such as justice, gender, ethnicity and power. Abuse evoked uncomfortable mental imagery and embodied responses for Stud2, who struggled to connect emotionally to the definitions and signs displayed in the image of her class notes on abuse. Troublesomeness arose from engaging emotionally with what it meant for the 'other' to experience this, and imagining future responses to abuse disclosures, such as fear of getting it wrong. The TG revealed this knowledge, and the emotional dilemma opened up further reflection. Taking account of the troublesomeness of not knowing and individuality in semiotic pedagogy, Smith-Shank (2010) states that 'methods and direction of inquiry must vary according to the contextual constraints of individual situations. Ambiguity is not only tolerated but also embraced and nurtured' (Smith-Shank, 2010, p.256). This position, however, suggests the fallacy of absolute conceptual correlation. As ED8B said, I "*make sure the person has gone away with the same understanding we have*" but acknowledges "*there's only so much you can account for in how people kind of perceive things as well*." Opposing simplified sender-receiver models (Favareau & Barbieri, 2008; Noth, 2014; Petrilli, 2012), learning

through signs can only be a conceptual approximation, with concepts uniquely constructed in the liminal spaces between each person's Umwelt.

Expressed feelings play a role in developing moral and loving care of the other, as Blustein (1991) stated when discussing ethical care. Images can awaken these affective and empathic responses by critically unpacking what connects the personal embodied self to the signs, which are also embodied themselves, linked to the sensory and material "body" of the world and human bodies (Lacković, 2020a). The study revealed the fine line educators walk in awakening emotions and offering meaningful support to reveal the self. Is it possible to avoid affect when teaching TCs in SC? This study suggests not, as social care is a highly emotive field. However, in learning philosophy, Booth (2006) suggests avoiding negative emotional states and promoting an 'emotional 'positionality'' (Booth, 2006, p.180) instead. I suggest that SC education may differ because discovering the embodied self through TCs, including negative emotions, is fundamental to learning about the other. Negative emotions are part of the student's and human experiences. We should not avoid them, but rather be very careful with them. SC can be defined as a human profession involving working with humans, where emotions are unavoidable and required in learning to use in practice. In that sense, TGs are an effective learning method, as presented in the results and thick descriptions of participants' responses.

5.5 Visual content related to conceptual meaning of TCs

The visual representation of TCs via TGs was insightfully diverse and demonstrates how semiotic conceptual construction varies among people. Signs are not entirely idiosyncratic according to Smith-Shank (2010), 'because humans share some common knowledge, collateral experience, and languages, our multiple meanings overlap, and we can communicate about a sign system within a community possessing some shared knowledge' (Smith-Shank, 2010, p.254).

There were 53 participant-provided photographs presented as TGs, which were categorised using Lacković's (2020a) image-concepts analysis framework (see Table 10). There was wide variation, with everyday activity/ personal experiences (familiar), challenge (unusual realisation) and place/ context (settings) featuring strongly and

culture (different contexts), close-up focus/ object (focal point) and cause/prerequisite (leading to realisation) featuring the least. The categories offered a valuable method to comprehend the conceptual operations at play in TG. The educator's examples of challenging ethical issues (Fig.15) and the everyday object of pens tipping over about trauma (Fig. 14) demonstrate how TG can operate as versatile and provocative devices with an IG approach for troublesome conceptual exploration development.

The researcher provided unfamiliar photographs and prompted a more detailed semiotic IG analysis resulting in rich responses to identify ICs and TCs. For example, photograph A was provocative with signs such as skin tone difference, eye gaze and hand prompting many ICs, such as silencing, abuse and violence. As the face, hand and eyes dominate with an unavoidable gaze, it prompts emotional and action responses. Skin tone differences prompted ICs of race and gender. Some viewed the image as dramatic and playful. With its unusual angle, Photograph B had signs of mirrors, the eye and the hand prompted imaginative narratives and questions. What is happening? What would I do? Participants commented on the shard of mirror in the hand as dangerous and linked to several ICs, including self, harm and reflection.

Historical photograph C was also rich in signs. The wheelchair was a versatile sign representing containment, inactivity, lack of choice and mobility, prompting responses including sadness and wanting to help. The photograph prompted a discussion on judging historical care within sociocultural timelines. The old handmade wheelchairs and the positioning of people in the historical institution led participants to consider how some concepts of care have changed over time. For example, modern care concepts may only be critically questioned in contrast to what has gone before, such as the inactivity of day rooms in modern nursing homes. TG such as this can, as Smith-Shank (2010) states, prompt 'critical classroom dialogue' for complexity and 'speculation about its initial cultural significance' (Smith-Shank, 2010, p.254), while acknowledging each person's unique interpretation (Lacković, 2020a).

Photograph D prompted rich interpretations with the ball of mostly yellow shoes, the person's clothes and the unusual lying position. The shoe, an everyday object and experience, functions here as a metaphorical sign within the sociocultural space. It

permitted conceptual expansion of ICs such as gender, diversity, creativity, loss and being with and connecting empathically and non-judgementally with others by putting myself into your shoes. Also, the unusual arrangement of the shoes on a large ball altered their normal fixed functionality, permitting a playful approach. This prompted meaning related to the IC of global perspectives on care and world affairs.

Visual signs in TG opened up SC conceptual knowledge and practices for closer examination, questioning and reflection. The researcher's photographs generated convergent and divergent interpretations depending on the participant's focus. Discussion began with a sign's meaning and progressed to reveal many interconnected ICs and TCs. There were distinct variations in the participant's chosen photographs reflecting different ICs representations. However, two similar photographs of notebooks represented two recently experienced but different ICs: child abuse (Stud2) and reflection (Stud5). This observation points to the sign's flexibility, in this case, an object used for learning, to represent a troublesome aspect of the participant's conceptual Umwelt. Therefore, I observed that by choosing photographs carefully, the IG approach of naming elements, engaging denotation and connotation generates a wealth of diverse semiotic meanings from each person's Umwelt for T&L of TCs and ICs and research. As discussed, salient photographic features, such as hands, eyes and objects, can be exploited for conceptual exploration and inferences, demonstrated here as a research methodology and a pedagogical approach.

5.6 Thoughts and implications of concepts and images for education

> 'The world of appearance, the very world we live in, is "created" by mind'
> (Bruner, 1986, p.96)

At the heart of education is how signs can mediate meaningful relationships to 'sustain, enable and constrain the organism's interactions – thus, they are ultimately qualitative and subject to dynamic change and growth' (Campbell et al., 2019, p.356). From a semiotic perspective, in agreement with Rossi (1987), the findings suggest education can be viewed as the meeting of multiple Umwelts, such as self, peers and educators, that aims to find and grow commonality and understanding at their intersections. The flexibility of the visual sign, due to our shared humanity and

sociocultural contexts, lends itself to this type of relational learning. As a pedagogy, the IG approach harnesses those visual signs which, according to Peirce (1974), are 'something which stands to somebody for something in some respect or capacity' (Peirce, 1974 CP 2.228). Using TGs with IG analysis brings into conscious focus conceptual troublesomeness for educators and learners, thus opening up opportunities for growth and interconnections between rhizomatic Umwelts. This should also alert us to the danger of assumptions (Rossi, 1987), based on *our* unique experiences, that impose conceptual solutions that fail to take hold (lack of fertile semiotic ground), do not evolve (rote learning and uncritical perspectives) or fixed ideas that remain isolated rhizomes. Therefore, as proposed in the findings, the Self-Other concept within the rhizomatic TCs structure (see Fig. 36) in social-care education facilitates a re-conceptualisation of the self, by learning TCs, to make the other known. By this, I mean TG learning reveals what is known, not yet known or as yet 'unthought' (Sellers & Gough, 2010, p.589), and it permits critical exploration leading to conceptual expansion in line with SC.

Farquhar et al.'s (2016) view of the self as an 'evolving text, albeit with a finite number of possibilities' (Farquhar & Fitzsimons, 2016, p.165) is relevant here as it suggests the self as a continuous evolution of *becoming* through the Umwelt that I introduced earlier (the environment where living beings are situated and interact through signs from their sign system and microenvironments (Umwelten)). The self, from this perspective, is a semiotic sign (Petrilli, 2004). In its sensory and material sense it is a representation, and in its conceptual sense the object of inquiry, the conceptual object of the representation and the interpretant (interpretation by teachers and students) of both the self and other. The self then becomes Self-Other. It is re-formed and constantly developed by relational engagement with a newly introduced system of signs, TCs, in the SC profession.

Working with these overarching concepts of self and other essentially means encouraging learners to develop relational thinking (Lackovic and Oltenu, forthcoming), that is, the ability to transgress the divide between oneself and some other. Getting to know the Umwelts of others helps to break down barriers and build empathy. For example, asking learners to step '*into the shoes*' of a migrant or a child

who has experienced abuse and then unpack images that show different aspects of this concept as TGs could reveal and challenge perceptions and shape new perspectives. As social care is a field where deep socio-emotional problems are part and parcel of practitioners' experiences, these new perspectives can bring critical awareness of how media presentations shape our consciousness and action in the world, awareness of self and others, support conceptual knowledge development and identify gaps in that knowledge (Lacković, 2020b). In addition, TGs encourage creative solutions to conceptual learning problems. Of course, the self can never fully understand the complex Umwelt of the other, only approximately by imagining. That is why we need to create conditions for exploring the "worlds" of others to challenge the ''*Umwelt* gap'' (Rossi, 1987, p.308, italics in original). SC education is, then, the formal process of bringing the embodied self *in relation* to the other through concepts and troublesome concepts. As Stables (2006) states, there is an irony in that 'teachers can never control the sense their students make of what they teach them' (Stables, 2006, p.379). This is why pedagogies such as TG can help elicit students' meanings, and how they make meanings of concepts as images facilitates more spontaneous and subconscious-driven interpretation. From this perspective, using TG as 'significant events' (Stables, 2006, pp.379) in teaching-learning can support the individualised process of making Umwelts visible to transform thinking.

In reference to Vygotsky's and Bakhtin's dialectics and dialogism, White (2014) noted contrasting positions in relation to self and other. For Vygotsky, knowledge leads to 'individual freedom, personal emancipation' (White, 2014, p.226) and certainty (objectivity) through self-reflection. While for Bakhtin, White (2014) states that 'freedom exists through multiple layers of analysis in relation with others since ... the word is always half someone else's and there is no one truth to be sourced as a conceptual whole' (ibid., p.226). Bakhtin argues that 'meaning comes about only when dialogue is exchanged with other' (ibid., p.226), embracing uncertainty (subjectivity). As White (2014) states, 'the intended outcome of education for Bakhtin can be viewed as a quest for alterity – the transgradient relations between self and other that constitute aesthetic activity and are manifest in utterance of this nature. Knowledge is therefore recognized as experienced gestalt rather than a neatly packaged set of goals

to be achieved' (ibid., p.229). Although Bakhtin leans towards the linguistic (Povtoreva & Chursinova, 2018), this position nevertheless acknowledges the inescapable intertwinement between self and other, the fallacy of absolute truth (aligned with Peirce's views) and education's role in finding relational conceptual threads 'in the life-story' (Stables, 2006, p.376) that lead to insights.

The Umwelt discussed here resonates with Goodman's (1984) and Bruner's (1986) world-making as constructed reality. Indeed, Goodman (1984) hints at semiotic roots by recognising how 'symbol systems' (Goodman, 1984, p.42) enable this. Also, Bruner (1986) states that 'world making involves the transformation of worlds and world versions already made' (Bruner, 1986, p.97), also recognising the system and situatedness of symbols as 'we compose and decompose worlds' (Bruner, 1986, p.102). This suggests SC education can then function to introduce and re-make worlds using TCs, and TG can play a role in unpacking these new realities or Umwelts using visual modes. Novice learners may need to persevere to see the relevance of new signs by embracing troublesomeness to integrate what is learned. Educators must connect with each learner's Umwelt by welcoming alternative perspectives and constructing new conceptual signs. Resistance, as discussed earlier, can come from breaking habits of mind (Semetsky, 2016b; Wimshurst, 2011), and such re-forming requires honesty (Steckley, 2020a), which may take time to be established in a learning community that acts as safe space for learning. The specific contribution that the thesis makes in this respect suggests a more sensory world-making, that is, making with visual and multimodal resources.

Another aspect is that TG offers a visual tool to unpack safely concepts that may arise in the future. By preparing for the unknown, the learner is open to formulating new signs that advance human caring. Learners, then, must be able to detach concepts from certainty and create new signs that respond to unknown futures (Barnett, 2012; Lyons, 2017), such as environmental sustainability issues, for example. Indeed, Campbell et al. (2021) argue for strong sustainability literacy and against mind/ body dualism by recognising humans as part of 'complex ecological systems' (Campbell, 2021, p.2). This is critical for sustainable living, and also acknowledges the importance of emotions/ affect in the formation of knowledge. The value of visual modes, such as

TG, lies in their polysemic properties which, according to Semetsky (2007a), reveal deeper meanings, have 'complex emotional associations' and have a 'cryptic character as pointing to something beyond itself' (Semetsky, 2007a, p.179).

In summary, visual modes are legitimate knowledge sources and generators, and they offer critical reflexive opportunities to explore cultural and social signs. Building on this stance, a critical lens for questioning, evaluating and actioning emancipative practice and re-framing power and accepted norms can be proposed. Images can provide an environmental "grounding" of concepts. Campbell et al. (2021) propose, from a new literacy perspective, that education must acknowledge 'the infinite semiotic freedom of (human) learners in relation to the constraints and affordances that their environing imposes' (Campbell et al., 2021, p.4). Therefore, multimodal resources, in this case, TG, offer the semiotic freedom to use personal and collective experiences through interpretation. Students' interpretations are therefore indispensable in the efforts to diffuse the struggles and liminality of the SC concepts they are learning, allowing for the growth of understanding in-between disciplinary and students' worlds and experiences, ultimately leading to learning.

The use of 'self' is a focus of SCEd and comes as a surprise to students. However, as these findings demonstrate, SCEd does not explicitly demonstrate, between the self, *focusing* on self and a journey *into* the self to know others via their signs for the purpose of ethical and empathetic care. I propose here the adoption of Self-Other in SCEd, as outlined in the findings, as an overarching TC that better describes how self and other have inseparable semiotic functions. As such, the self forms and re-forms from semiotic relations, including sensory, with other/s at the intersections of our Umwelts. As Olteanu (2015) points out, triggering a semiotic process, such as discovering 'similarities' within images, for example, can reshape 'an entire Umwelt', resulting in 're-cognition' (Olteanu, 2015, p.56). From a semiotic perspective, the teacher is also a learner, according to Olteanu (2015), and TG offers many conceptual possibilities highlighting similarities and differences for reciprocal engagement.

Overall, the findings support edusemiotics through inquiry graphics and threshold concepts as TG, which work well together to make visible semiotic sociocultural worlds

authentically. This positions learning in relation to care, using Self-Other as inevitably transformative at some level and at times troublesome, as the self involves (if open to it) being re-conceptualised by integrating other/s. In that light, TG's use recognises troublesome learning by looking for the conceptual signs through images that bring the learner over a threshold into a different way of knowing. Based on this, learners need to be informed early in their student lives about the origins of troublesomeness and attempt to normalise these experiences through the self-other TC.

On another point, as the goal of SC education is to learn to 'think like… ' (Meyer & Land, 2012, p.23) an SCW, the TCs identified using TG can contribute to professional formation. Disciplines are, according to Perkins (2006), 'more than bundles of concepts' (Perkins, 2006, p.42) and this study, for the first time, reveals the interconnected rhizomatic network of TCs and ICs working together as 'epistemes' (Perkins, 2006, p.42) or, as Eco (1976) states, 'the structure connecting and correlating signs with each other' (Eco, 1976, p.69), an often neglected area of research. Indeed, studies of this kind tend to be smaller in scale and focus on a specific discipline. As social-care programmes are informed by multiple disciplines, a large number of concepts identified reflects this.

Concepts at the beginning of SCEd are vague and underdeveloped for specific use in practice. The educator then needs to bring conceptual signs into relation with the learner's Umwelt while simultaneously creating links, often by critical questioning, building upon and repurposing commonly understood concepts, for actioning within SC practice. This edusemiotic approach can help educators to 'start where the learner is' (Hunt, 1961, p.268), map the TCs to required practice proficiencies (SCWRB, 2017), employ TG as argued for here and design modules and programmes that bring awareness to and integrate semiotic conceptual learning.

As the findings suggest, concurring with Meyer & Land (2003a), transformation may occur suddenly or 'be protracted over a considerable period of time' (Meyer & Land, 2003a, p.1). The process is, then, highly individualised as the student can enter liminality at various points and respond to various TCs depending on what resonates or does not with their Umwelt. To conclude, the teaching act and using images as TG can

help bring students into a state of readiness for recognising sign similarities, bridging the conceptual gap between what is 'out there' and the mind, an often disruptive process.

5.7 Limitations of the study

As I conclude this study, I acknowledge the limits and instability of my continuing knowledge development which is, as Peirce states, 'penetrated with a sense of the unsatisfactoriness of one's present condition of knowledge' doubt (Peirce, 1974, CP 5.583).

I hold two positions; 'insider' (teaches on a social-care programme) and 'outsider' (not qualified as a social-care worker), depending on who is judging (Trowler, 2016). Although there is some debate as to the compatibility of this dual position (Titchen & Hobson, 2011), I am cognisant of its benefits (access to & knowledge of programmes) and limitations (acceptance, qualified to research the profession, personal teacher bias). In short, I have established perspectives from both inside/out and outside/in positions.

TC research is usually discipline-specific (Meyer & Land, 2003b), and although I was familiar with most SC concepts, there were some limitations regarding discussing specific concepts. On the other hand, educators of a similar discipline may also have limitations, as proposing different threshold concepts depends on their epistemological stance. As Quinlan (2013) states, the positivist, constructivist or social constructivist also adds to this complexity from the researcher's perspective. Also, as Cousin (2008) states, the troublesomeness of a threshold concept is far from certain and 'may include its own inherent instability' (Cousin, 2008, p.263). To counter this limitation, the interviewees' detailed exploration of troublesome learning and experiences allowed detailed discussion and visual analysis of aspects of difficulty. The interviews revealed previously unrecognised conceptual troublesomeness and was, therefore, a reflective IG eliciting process offering insights for both interviewees and researcher. Also, participation may have been limited due the requirements to think about uncomfortable learning experiences and find or take and submit a photograph prior to interview. For some students and graduates the prospect of re-visiting this

aspect of their learning may have been insurmountable. For educators, the allocation of time may have been a factor.

Although three educators requested a phone call to discuss TC theory and the methodological approach and to check if their contribution was beneficial based on personal interest, knowing threshold concept theory was not a requirement for participation. This approach could be a limitation as many TC research studies expect some understanding. My research approach was advantageous as the participants were free to select experiences without undue theoretical influence by looking for troublesome and uncomfortable learning. However, some participants' awareness of TC theory may also have influenced the choice of concepts. This research avoided the pitfalls of 'theoretical' correctness and defining 'concepts' by focusing on and analysing visual representations that allowed for actual troublesome experiences to come to the surface and be reflected upon at a deeper level.

Whether concepts were TCs or not was determined by the data analysis related to TC characteristics. In support of this, Quinlan (2013) describes a project with TC theory in which a dispute arose over the meaning of 'concepts' and 'threshold concepts'. To avoid this, the author chose a follow-on project to focus, as this research does, 'on the criteria of interest, primarily transformation, integration and troublesomeness' (ibid., p.590). Also, Quinlan et al. (2013) note that educators do not reflect deeply when focused on 'textbook notions of the curriculum content' (ibid., p.592).

This research has focused on uncomfortable knowledge and learning as an indicator of threshold concepts, which may have focused the participants' attention on only one aspect. In that way, they may have problematised concepts that may not be necessarily defined as "threshold". Hill (2020) suggests a difference between a threshold concept and troublesome knowledge, and it is sometimes a fine line in defining which one is a TC. Again, data analysis based on TC characteristics clarified the distinction.

Shinner-Kennedy (2016), in agreement with Bartlett (1932), argues that memory recall is a construction rather than accurate reproduction, relying on the intertwining of immediate perception and facts supplied after the event. According to Blane (1996),

recalling emotionally laden events is also problematic and less likely to be recalled accurately, a limitation of this research.

For educators, there may be an epistemological divergence between discipline-focused researchers and focused pedagogical experts, influencing the selection of troublesome concepts (Shinner-Kennedy, 2016). Educators may have been subject to hindsight bias and blind spots rather than actual students' learning development (ibid.). Shinner-Kennedy (2016) also points to research yielding only basic level concepts due to people's inclination towards 'cognitively efficient' classification and methodological shortcomings in language use (ibid., p.260) and speaks of experts being unable to make an 'impartial evaluation' (ibid., p.264). While although Zwaneveld (2016) disputes Shinner-Kennedy's (2016) arguments, they may have some validity in highlighting a more positivist desire for certainty. It is also worth noting Stables (2006), who points out how people bring interpretations originating from multiple sources, sometimes outside their awareness. This research took account of these issues and used a retrospective method.

The study did not focus on specific programmes and worked on the assumption that the content of social-care programmes is reasonably consistent across colleges. This assumption was based on each programme's mandatory alignment with the national 'Social Care Work Awards Standards' (QQI, 2014) and the close working relationships among educators as part of the Irish Association of Social Care Educators (IASCE). However, as staff qualifications and research interests differ, and as SC is an interdisciplinary field, modules may reflect those preferences. Therefore, standalone concepts may have observed relevance and potency differently within the context of programmes and nationally. There was also a risk that participants would choose images based solely on the availability of visual materials and quick searches via Google, rather than reflecting more deeply, looking for or taking a photo that represented a specific concept or uncomfortable learning experience. This is a limitation of the visual method itself. Overall, the large sample attempted to overcome these limitations and present a broader landscape or map of views.

Importantly, there is a challenge when applying images in research concerning their accessibility (to blind and visually impaired learners), their content (to what extent viewers may find it upsetting, problematic or controversial) and copyright for publication purposes, as any image can be used for educational purposes. However, it is good practice to acknowledge the author or resource. Regarding accessibility for blind and visually impaired learners, applying IG has an advantage as a teaching and learning method as it explicitly requires picture descriptions. The listing and naming of picture elements, as mentioned above, as part of the analysis was also beneficial.

I acknowledge that data interpretation is subjective and can be influenced by my own and others' biases and idiosyncrasies. As the IG process involved participants analysing their own and researcher-provided images, extracted meanings were specific. The charge that visual research may not meet the rigour of standards required by social-science research (Emmison, 2016) is mitigated by this approach. Interpreting images is just as interpretative as interpreting interviews – it involves one's interpretation that may differ. However, qualitative research in the social sciences, such as interviewing, does not differ in the subjectivity of the researcher herself – all data are interpreted. The advantage of IG lies in naming picture elements (representamen/ representation stage) as it provides an element of interpretative generalisability higher than, for example, thematic analysis. Finally, applying the TG method in SC pedagogy, requiring time and training commitments, might be a challenge, as teachers may not feel prepared to use it or understand it well. The organisation of this at an institutional level through teaching development and CPD is a plausible option.

Chapter 6: Conclusion and Recommendations

This study contributes to knowledge by utilising threshold concepts theory and inquiry graphics theory to identify TCs and linked ICs, based on troublesomeness in SC and evaluated IG with concept-images as 'threshold graphics', for teaching and learning TCs and as a research approach using photo-elicitation and IG analysis. Inquiry graphics has been utilised here as a theoretical approach, as a potential critical visual tool in teaching, as a visual inquiry research method combined with photo-elicitation, and as a guide for critical visual analysis in this research. In doing so, participants could evaluate 'threshold graphics' potential as a semiotic tool for teaching and learning TCs.

This research focused on troublesomeness as a characteristic of TC theory. It linked this to semiotic thinking, genuine doubt (Peirce, 1974, CP 5.498), liminality, certainties, affective dimensions and the role of communities of practice and episteme. I followed this by outlining Blunden's (2012) theory of concepts as flexible entities constructed from rich fragments originating from cultural and social practices. This aligned edusemiotics and the interrogation of signs in the visual world with the inquiry graphics framework (IG). Although a wide variety of pedagogies linked with affect and self were found in the TC literature, there were no semiotic or visual approaches, and a review of TCs in the related areas of health and social professions found gaps in TC knowledge related to SC.

The research found that the learner's motivation to study SC demonstrated a desire to bring the self into relation with the other by wanting 'to help' based on personalities and direct experience. I found that through the principal TC of Self-Other and the rhizomatic network of 14 TCs and 80 linked ICs, learners were challenged to question and assimilate what it means to enter into a professional care relationship with others. These conceptual learning experiences were profoundly troublesome as they resonated strongly because of or in contrast to experiences, or were abstract and beyond comprehension. From this stance, the other had to be humanised within the sociocultural context and in doing so the semiotic construction of the self was revealed, sometimes painfully. Here semiotic learning was guided by educators as pushing beyond the known into uncertainty, resulting in a transformation of self and thus modifying perspectives of reality. This position also recognises provisional

semiotic stability as conceptual understandings must be continuously challenged by how society changes and adapts. Political and social responses to care, inquiries, reports and legislation have and will continue to inform and shape SC education. Teaching troublesome concepts may also require acknowledging conceptual idealism where the theory is not enacted in practice, and being sensitive to how troublesome details are communicated to learners. Also, troublesome peer interactions may need to be reframed as semiotic TC learning for Self-Other exploration, capable of revealing early conceptual glimpses of what it means to be a professional in SC practice. From this perspective, the self is better positioned to serve others by recognising all human frailty, the profound complexity of relationships and how the sociocultural and political context impacts on care practice.

The strength of this research lies in exploiting the semiotic foundations of IG with a photo-elicitation method to make known the extensive rhizomatic network of ICs and TCs operating as an 'episteme' (Perkins, 2006, p.43), demonstrated as a 'threshold rhizome' (TR), (Fig. 6: Self & Care TCs) within SC education. IG with photographs was also proposed as 'threshold graphics' that effectively prompted deeply reflective responses revealing troublesome concepts emerging from participants' Umwelts. Arising from this, I propose that SC programme design take account of the proposed Self-Other TC and the many interconnected rhizomatic ICs linked to the TCs in operation and promote teaching approaches that trigger and provoke critical responses, inducing troublesomeness, as necessary pedagogical events for threshold concept learning. Educators should receive an overview of the TCs and ICs findings to encourage TC informed programme and module design and specific educational training regarding selecting TGs (student and educator), inquiry graphics analysis skills, emotional support, time restraints and working with large/small groups. Also, acknowledging the individualised nature of troublesomeness can foster states of liminality with corresponding learner support. On this basis I argue for, as the findings demonstrate, an adaptable and responsive pedagogical relational approach of using inquiry graphics to teach and learn threshold concepts in social care, but also other disciplines through 'threshold graphics' (Lacković, 2020a, p.145). This study demonstrated that TC was a critical visual inquiry tool that opened up the relation

between self and other for sensory (including emotions), structural and contextual critique, sometimes hidden or opaque in care.

In summary, the IG photo-elicitation method and threshold graphics effectively identified TCs, revealing rhizomatic ICs in operation, concluding that TGs are valuable visual semiotic tools for teaching and learning in SC and research. The value of using the IG photo-elicitation method as a novel research approach to identify TCs, ICs and TG for teaching and learning TCs is underway with my publications (Mac Giolla Rí, 2020, 2022b, 2022a) and conferences (Mac Giolla Rí, 2021). More generally, future TC research, based on this approach, may wish to focus on ICs using the IG photo-elicitation method to reveal rhizomes at work as indicators of TCs. Finally, this study is situated within a more significant semiotic relational learning movement (Lacković & Olteanu, 2020), opposed to dualism (Stables, 2010), that recognises the potential of provoking critical and sometimes troublesome concepts by interpretative IG engagement with visuals, thus elevating individuality to Umwelts (von Uexküll, 2010) and promoting human growth into the future (Semetsky, 2016b).

6.1 Summary of recommendations

The following recommendations offer specific actions that can develop pedagogical practices and research. The TC and IC findings can be communicated to SC educators at social-care conferences and in publications to encourage IC and TC-informed programme and module design. Educational training focusing on how threshold graphics can help to teach ICs and TCs could be developed with university teaching and learning centres. This training would inform educators about threshold graphics (students and educators) by understanding semiotic theory and inquiry graphics analysis skills, and the underpinning theory. This would include selecting images as TG (students and educators), offering emotional support, ethical considerations, overcoming time restraints and working with large and small groups. Publications and conferences can communicate the value of using the IG photo-elicitation method as a novel research approach to identify TCs. Also, university teaching and learning centres can develop training on ethical and safe practices and inquiry graphics analysis skills when employing inquiry graphics photo-elicitation in research.

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Appendices

Appendix 1 – Participant Information sheet

Participant Information Sheet

Threshold concepts and new knowledge perspectives with visuals in Social-care education

You are kindly invited to take part in my PhD thesis research with the *Higher Education Research, Enhancement and Evaluation Centre* in the Department of Educational Research at Lancaster University. Before you decide if you wish to take part you need to understand why the research is being done and what it would involve for you. Please take time to read the following information carefully. Talk to others about the study if you wish. Ask me if there is anything that is not clear or if you would like more information. Take time to decide whether or not you wish to take part.

The purpose of the study

This research is for my thesis on the PhD in *Higher Education Research, Evaluation and Enhancement* (HEREE) programme within the Department of Educational Research at Lancaster University.

My research aims to explore, understand and define Threshold Concepts held by three main groups: graduates, students and educators (knowledge contributors). The visual methodology of Inquiry Graphics (Lacković, 2018) will explore pedagogical approaches and the identification of troublesome and transformative concepts.

What participation involves and how to withdraw if you no longer wish to participate

Why have I been invited?

You have been invited because you are either a **student attending a Social care programme**, have **graduated from a Social Care programme** up to level 7 or level 8 (eligible to register with CORU), are currently a **lecturer teaching a subject on a Social-care programme or** you are a **researcher and/or knowledge contributor** to the social-care profession**.**

Do I have to take part?

No, your participation is entirely voluntary and you are free to withdraw at any time after you take part in an interview, without giving any reason. Your related data (recordings, notes) would be destroyed and all references removed. If you do not wish to be recorded, please indicate this. Every effort will then be taken to ensure that your data/voice are removed from recordings by editing out where possible or excluding such data from any transcripts. Where appropriate, an online interview will be offered.

What would taking part involve for me?

(1) **Lecturer-participant Interview**: This research invites you take part in an interview about your reflections and experiences of **teaching conceptually difficult material** fundamental to your subject area. It invites you to take or select/find **photograph/s** that represent an area of **conceptual difficulty** for the students you teach. The photo/s can be sent to me via email, WhatsApp prior to the interview or brought with you on the day. The researcher will also show you four photographs related to the research for your comment. The photograph/s will inform the interview discussion and a digital copy will be stored as data. The interview will take approximately 45min. A transcript of the interview will be returned to you for comment on should you wish.

   a. **Teaching using Inquiry Graphics:** After the interview you will be invited to use the Inquiry Graphics template in your teaching. This is entirely optional. If you agree an instruction pack will be given. This will be followed up with a brief phone interview.

(2) **Student Participant:** For this research you are invited to take part in an interview and to take or select/find **photograph/s** that represent an **uncomfortable learning experience** encountered in your Social-care degree. The photo/s can be sent via WhatsApp, brought along to the interview, posted or emailed to the researcher to print out prior to the interview. Arrangements will be made regarding the photo/s with you via email. The researcher will also show you four photographs related to the research for your comments. The photograph/s will inform the interview discussion and a digital copy will be stored as data. An interview date and time will be agreed via email. Interviews can take place in institute A or at another suitable site convenient to you. The interview will take approximately 30min. A transcript of the interview will be returned to you for comments should you wish.

(3) **Graduate Participant**: For this research you are invited to take part in an interview about your reflections and experiences, andto take or select/find **photograph/s** that represent **an uncomfortable learning experience** encountered in your Social-care degree. The photo/s can be sent via WhatsApp, brought along to the interview, posted or emailed to the researcher to print out prior to the interview. The researcher will also show you four photographs related to the research for your comments. The photograph/s will inform the interview discussion and a digital copy will be stored as data. An interview date and time will be agreed via email. Interviews can take place in institute A or at another suitable site convenient to you. The interview will take approximately 30min. A transcript of the interview will be returned to you to comment on should you wish.

(4) **Researcher and/or knowledge contributor in social care Participant**: For this research you are invited to take part in an interview about your reflections and experiences of social-care education and research, and to take or select/find **photograph/s** that represent **conceptually difficult** material fundamental to your subject area or the profession of social care. The photo/s can be sent to me via email, WhatsApp prior to the interview or brought with you on the day. The researcher will also show you four photographs related to the research for your comment. The photograph/s will inform the interview discussion and a digital copy will be stored as data. The interview will take approximately 30min. A transcript of the interview will be returned to you to comment on should you wish.

WhatsApp message to: [redacted]

Counselling Support:

Counsellor numbers are provided below should you require emotional support, prior to, during or after the research.

- Institute A Counsellor [redacted] email: [redacted]
- Institute A Counsellor Helen Carberry, [redacted] email: [redacted]

SAMARITANS Ireland, Web: www.samaritans.org, Phone: 116 123 (open 24 hours), E-Mail: jo@samaritans.org

AWARE, Web: www.aware.ie, Phone: 1800 80 48 48 (available Monday to Sunday from 10 AM to 10 PM)

E-Mail: supportmail.aware.ie

GROW: World Community Mental Health Movement in Ireland, Web: www.grow.ie, Phone: 1890 474 474

Protecting your data and identity

What will happen to the data?

'Data' here means the researcher's notes, photographs, survey results, workshop outputs, audio recordings and any email exchanges we may have had. The data may be securely stored for ten years after the successful completion of the PhD *Viva* as per Lancaster University requirements, and after that any personal data will be destroyed. Audio-recordings will be transferred and stored on my encrypted personal laptop and deleted from portable media. If you use WhatsApp your phone number, it will not be stored after the photograph/s are received.

Identifiable data (including recordings of your and other participants' voices) on my personal laptop will be encrypted. With devices such as portable recorders where this is not possible identifiable data will be deleted as quickly as possible. In the meantime I will ensure the portable device will be kept safely until the data are deleted.

You can request to view the field notes or listen to the audio at the end of the interview and any parts you are unhappy with will be deleted, or disregarded from the data. Data may be used in the reporting of the research (in the thesis and then potentially in any papers or conference presentations). Please note that if your data are used, they will not identify you in any way or means, unless you otherwise indicate your express permission to do so.

Once the study is complete, anonymised data including photographs and transcripts (where possible) will be stored for 10 years in Lancaster University's research data repository called Pure to share in the future with internal and external researchers. This increases access to research data, thus opening up opportunities for peer scrutiny, and enhances quality research.

You have full protection via the UK Data Protection Act, General Data Protection Regulation (GDPR) and Irish Data Protection Acts 1988 & 2003. The completion of this study is estimated to be by June 2021 although data collection will be complete by September 2020.

Data will only be accessed by members of the research team and support services, this includes my supervisor and secretarial services for transcription. REV.com or similar will be used for secure transcription.

The research findings may be used for journal articles and conference presentations.

How will my identity be protected?

A pseudonym will be given to protect your identity in the research report and any identifying information about you will be removed from the report. All pseudonyms will be securely stored and kept by myself.

Who to contact for further information or with ***any*** concerns

If you would like further information on this project, the programme within which the research is being conducted or have any concerns about the project, participation or my conduct as a researcher please contact: Supervisor as stated below and/or Professor Paul Ashwin – Head of Department Tel: +44 (0)1524 594443, Email: P.Ashwin@Lancaster.ac.uk Room: County South, D32, Lancaster University, Lancaster, LA1 4YD, UK.

Thank you for reading this information sheet. *Denise Mac Giolla Rí*

Researcher: Denise Mac Giolla Ri, *Creative Arts Lecturer*, *Office E2325 Social Care Dept. School of Science and Health*, *Athlone Institute of Technology, Dublin Rd. Athlone, Co Westmeath*, [redacted] *dmacgiollari@ait.ie*

***Supervisor: Dr Natasa Lackovic*.** Educational Research Department, County South, Lancaster University, LA1 4YD, UK**,** Tel: +44 1524 594662 mail: n.lackovic@lancaster.ac.uk

Appendix 2 – Consent Form

CONSENT FORM

Project Title: Threshold concepts and new knowledge perspectives with visuals in Social-care education.

Name of Researcher: Denise Mac Giolla Rí

Email: d.macgiollari@lancaster.ac.uk & dmacgiollari@ait.ie

Please tick each box

1. I confirm that I have read and understand the information sheet for the above study. I have had the opportunity to consider the information, ask questions and have had these answered satisfactorily	☐
2. I understand that my participation is voluntary and that I am free to withdraw at any time during my participation in this study, without giving any reason.	☐
3. I understand that any information given by me may be used in future reports, academic articles, publications or presentations by the researcher, but my personal information will not be included and I will not be identifiable. Fully anonymised data will be offered to PURE – Lancaster University and will be made available to genuine research for re-use.	☐
4. I understand that my name/my organisation's name will not appear in any reports, articles or presentation without my consent.	☐
5. I understand that any online interviews will be audio-recorded and transcribed, and that data will be protected on encrypted devices and kept secure.	☐
6. I understand the photographs shared in the interview are retained, become part of the data set and my anonymity will be ensured.	☐

7. I understand that data will be kept according to University guidelines for a minimum of 10 years after the end of the study.	☐
8. I agree to take part in the above study.	☐

_____ _____ _____

Name of Participant Date Signature

I confirm that the participant was given an opportunity to ask questions about the study, and all the questions asked by the participant have been answered correctly and to the best of my ability. I confirm that the individual has not been coerced into giving consent, and that consent has been given freely and voluntarily.

Signature of Researcher /person taking the consent_____ Date _____ Day/month/year

One copy of this form will be given to the participant and the original kept in the files of the researcher at Lancaster University

Appendix 3 – Educator/knowledge contributor to Social-care Interview Schedule & Demographic Information Sheet

How old are you? (circle as appropriate)	18–25 years 26–49 years 50–64 years 65 and older
What is your gender?	female male transgender other
What is your race/ethnicity?	

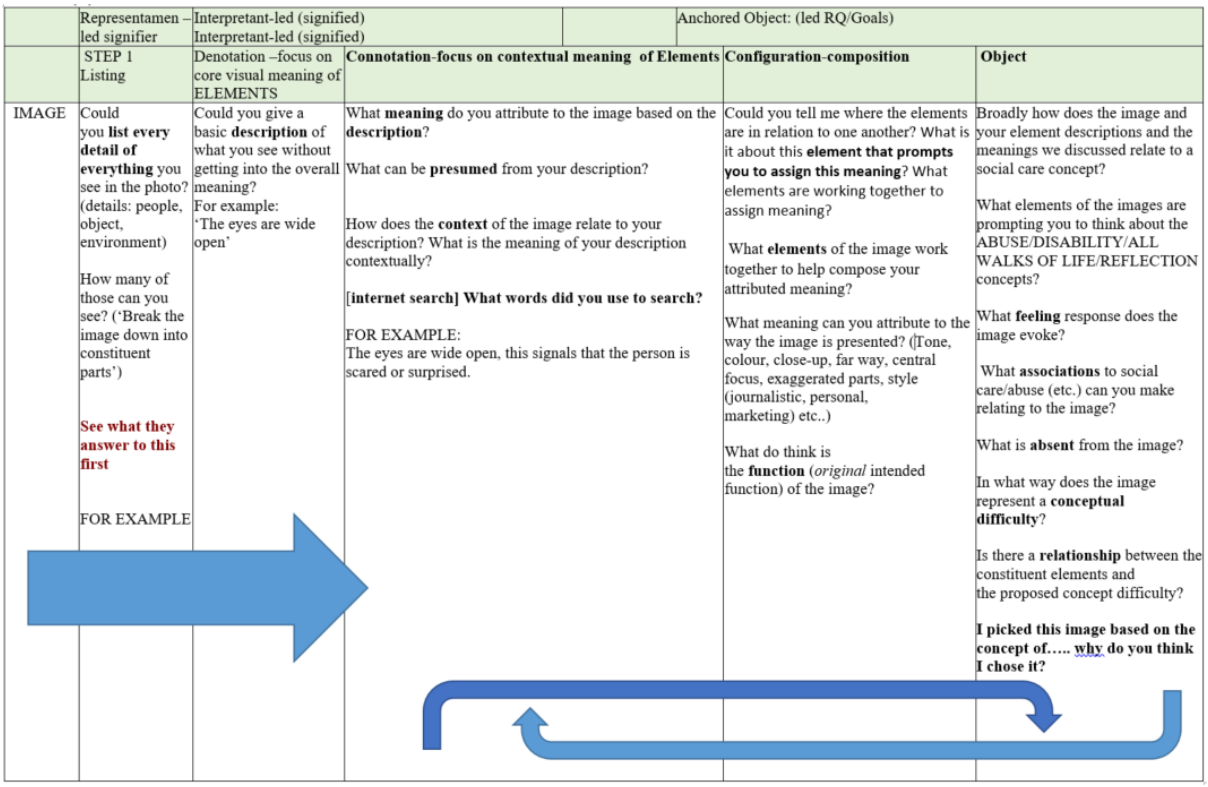
Identified social class?	

Career trajectory:

- Could you tell me about your career and qualifications up to the present day?
- What discipline or subject do you teach or research in SC?
- How many years have you taught/researched in this area?

Photo/s

I asked you to select or take a photo/s that represent in your opinion an area of conceptual difficulty or troublesome knowledge in Social Care. We can explore those photos now using the Inquiry Graphics Framework.



	Representamen – led signifier	Interpretant-led (signified) Interpretant-led (signified)		Anchored Object: (led RQ/Goals)	
	STEP 1 Listing	Denotation –focus on core visual meaning of ELEMENTS	**Connotation-focus on contextual meaning of Elements**	**Configuration-composition**	**Object**
IMAGE	Could you **list every detail of everything** you see in the photo? (details: people, object, environment) How many of those can you see? ('Break the image down into constituent parts') **See what they answer to this first** FOR EXAMPLE	Could you give a basic **description** of what you see without getting into the overall meaning? For example: 'The eyes are wide open'	What **meaning** do you attribute to the image based on the **description**? What can be **presumed** from your description? How does the **context** of the image relate to your description? What is the meaning of your description contextually? **[internet search] What words did you use to search?** FOR EXAMPLE: The eyes are wide open, this signals that the person is scared or surprised.	Could you tell me where the elements are in relation to one another? What is it about this **element that prompts you to assign this meaning**? What elements are working together to assign meaning? What **elements** of the image work together to help compose your attributed meaning? What meaning can you attribute to the way the image is presented? (Tone, colour, close-up, far way, central focus, exaggerated parts, style (journalistic, personal, marketing) etc..) What do think is the **function** (*original* intended function) of the image?	Broadly how does the image and your element descriptions and the meanings we discussed relate to a social care concept? What elements of the images are prompting you to think about the ABUSE/DISABILITY/ALL WALKS OF LIFE/REFLECTION concepts? What **feeling** response does the image evoke? What **associations** to social care/abuse (etc.) can you make relating to the image? What is **absent** from the image? In what way does the image represent a **conceptual difficulty**? Is there a **relationship** between the constituent elements and the proposed concept difficulty? **I picked this image based on the concept of….. why do you think I chose it?**

Photo-elicitation Using the Inquiry Graphics Framework (as above)

I have four photos I will show you.

Subject Concepts:

- From your research/experience and discussion of the photograph, what concepts that relate to a specific subject or discipline do students find

'troublesome', which may seem counter-intuitive, alien or seemingly incoherent?

- If you teach, tell me about how you respond in your teaching approach? What is useful and what is not?
- How would you suggest these concepts be taught?

- If students are finding a concept difficult, **what have you noticed** about how they respond?
- What concepts in your subject, once understood, seem to offer the student a new way of thinking, talking, acting and performing?

Knowledge contribution

- What are in your opinion the **core or key concepts** in social care?
- What SC concepts in your opinion **require further development and research**?

Multi-disciplinary Crossover

- What concepts from within your subject do you see as having cross-over with other SC subjects?
- As an educator, **what concepts cause most difficulty** in SC?
- What **specific concepts** in your opinion seem to, once understood, **transform students' thinking**, discourse and practices?
- If troublesome concepts can be identified, what suggestions would you have for teaching them in SC education?

Visual framework for teaching and research

- *To what extent do you use visuals in your teaching?*
- *Do you think there is a role for visuals in teaching troublesome or difficult concepts?*
- *Having seen how we broke down the detail of the images using the IG framework, do you see any value in this approach in teaching troublesome concepts?*
- What value, if any, do you see in the process of critically 'unpacking' photographs, as we have done here, for teaching or research purposes?

- *What barriers might there be?*
- Would you use this visual 'unpacking' approach in your teaching/research?
- Would you like **access to an online resource** for this purpose?

Appendix 4 – Graduate Interview Schedule & Demographic Information Sheet

How old are you? (circle as appropriate)	18–25 years 26–49 years 50–64 years 65 and older
What is your gender?	female male transgender other
What is your race/ethnicity?	
Highest educational attainment and qualification?	
College attended	
Identified social class?	

Graduate in Social Care Education Educational trajectory:

In this section we will talk about your educational journey.

- Could you tell me about your educational past up until the present day?
- How many years would you say you have been in third-level education?

Photo/s

I asked you to take or select/find photos of places, spaces, events, objects, situations and so on that are reminiscent of an uncomfortable learning experience you encountered in your Social-care degree. We will now explore the images using the Inquiry Graphics framework.

	Representamen – led signifier	Interpretant-led (signified) Interpretant-led (signified)		Anchored Object: (led RQ/Goals)	
	STEP 1 Listing	Denotation –focus on core visual meaning of ELEMENTS	**Connotation-focus on contextual meaning of Elements**	**Configuration-composition**	**Object**
IMAGE	Could you **list every detail of everything** you see in the photo? (details: people, object, environment) How many of those can you see? ('Break the image down into constituent parts') **See what they answer to this first** FOR EXAMPLE	Could you give a basic **description** of what you see without getting into the overall meaning? For example: 'The eyes are wide open'	What **meaning** do you attribute to the image based on the **description**? What can be **presumed** from your description? How does the **context** of the image relate to your description? What is the meaning of your description contextually? **[internet search] What words did you use to search?** FOR EXAMPLE: The eyes are wide open, this signals that the person is scared or surprised.	Could you tell me where the elements are in relation to one another? What is it about this **element that prompts you to assign this meaning**? What elements are working together to assign meaning? What **elements** of the image work together to help compose your attributed meaning? What meaning can you attribute to the way the image is presented? (Tone, colour, close-up, far way, central focus, exaggerated parts, style (journalistic, personal, marketing) etc..) What do think is the **function** (*original* intended function) of the image?	Broadly how does the image and your element descriptions and the meanings we discussed relate to a social care concept? What elements of the images are prompting you to think about the ABUSE/DISABILITY/ALL WALKS OF LIFE/REFLECTION concepts? What **feeling** response does the image evoke? What **associations** to social care/abuse (etc.) can you make relating to the image? What is **absent** from the image? In what way does the image represent a **conceptual difficulty**? Is there a **relationship** between the constituent elements and the proposed concept difficulty? **I picked this image based on the concept of….. why do you think I chose it?**

- Why did you take/choose it? How do you feel about it?
- Why is this an uncomfortable situation/event/place/memory/object?
- Do you recall what subject knowledge this was related to?
- How did you 'make sense' of this in relation to your social-care education?
- Can you talk me through some difficult events and situations in your social-care educational experience?
- As a student you would have progressed through several subject areas, can you talk to me about this experience?
- Thinking back to then, can you identify or illustrate times when you had to change old for new knowledge? How did that feel?
- Was there anything that impinged on or supported this process? What did you do to cope?
- What learning were you able to identify from these experiences?
- Can you talk me through any experiences of teaching related to this?
- Again, thinking back to the beginning of your social-care education, what were your initial impressions? What did you notice?

- Thinking back to the beginning of your social-care education, can you describe 'whom you were'?
- Can you describe whom you are now?

Photo-elicitation using the Inquiry Graphics Framework (as above):

I have four photos I will show you and we will now explore thesee images using the Inquiry Graphics framework.

Learning using photographs

- What value, if any, do you see in the process of critically 'unpacking' photographs, as we have done here today?

Appendix 5 – Student Interview Schedule & Demographic Information Sheet

How old are you? (circle as appropriate)	18–25 years 26–49 years 50–64 years 65 and older
What is your gender?	female male transgender other
What is your race/ethnicity?	
Highest educational attainment and qualification?	
College attended	
Identified social class?	

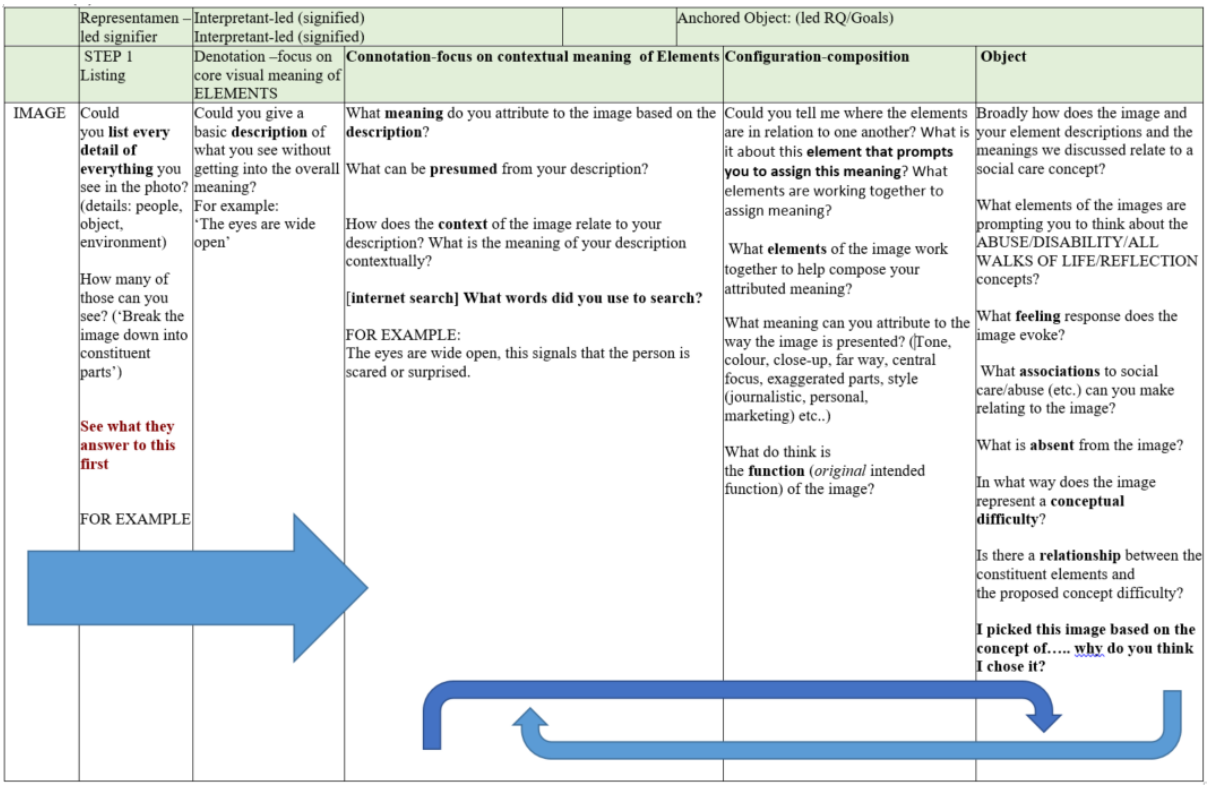
Student in Social Care Education Educational trajectory:

In this section we will talk about your educational journey.

- Could you tell me about your educational past up until the present day?
- How many years would you say you have been in third-level education?

Photo/s

I asked you to take or select/find photos of places, spaces, events, objects, situations and so on that are reminiscent of an uncomfortable learning experience you encountered in your Social-care degree. We will now explore these images using the Inquiry Graphics framework.



	Representamen – led signifier	Interpretant-led (signified) Interpretant-led (signified)		Anchored Object: (led RQ/Goals)	
	STEP 1 Listing	Denotation –focus on core visual meaning of ELEMENTS	**Connotation-focus on contextual meaning of Elements**	**Configuration-composition**	**Object**
IMAGE	Could you **list every detail of everything** you see in the photo? (details: people, object, environment) How many of those can you see? ('Break the image down into constituent parts') **See what they answer to this first** FOR EXAMPLE	Could you give a basic **description** of what you see without getting into the overall meaning? For example: 'The eyes are wide open'	What **meaning** do you attribute to the image based on the **description**? What can be **presumed** from your description? How does the **context** of the image relate to your description? What is the meaning of your description contextually? **[internet search] What words did you use to search?** FOR EXAMPLE: The eyes are wide open, this signals that the person is scared or surprised.	Could you tell me where the elements are in relation to one another? What is it about this **element that prompts you to assign this meaning**? What elements are working together to assign meaning? What **elements** of the image work together to help compose your attributed meaning? What meaning can you attribute to the way the image is presented? (Tone, colour, close-up, far way, central focus, exaggerated parts, style (journalistic, personal, marketing) etc..) What do think is the **function** (*original* intended function) of the image?	Broadly how does the image and your element descriptions and the meanings we discussed relate to a social care concept? What elements of the images are prompting you to think about the ABUSE/DISABILITY/ALL WALKS OF LIFE/REFLECTION concepts? What **feeling** response does the image evoke? What **associations** to social care/abuse (etc.) can you make relating to the image? What is **absent** from the image? In what way does the image represent a **conceptual difficulty**? Is there a **relationship** between the constituent elements and the proposed concept difficulty? **I picked this image based on the concept of….. why do you think I chose it?**

- Why did you take/choose it? How do you feel about it?
- Why is this an uncomfortable situation/event/place/memory/object?
- Do you recall what subject knowledge this was related to?
- How did you 'make sense' of this in relation to your social-care education?
- Can you talk me through some difficult events and situations in your social-care educational experience?
- As a student you would have progressed through several subject areas, can you talk to me about this experience?
- Thinking back to then, can you identify or illustrate times when you had to change old for new knowledge? How did that feel?
- Was there anything that impinged on or supported this process? What did you do to cope?

- What learning were you able to identify from these experiences?
- Can you talk me through any experiences of teaching related to this?
- Again thinking back to the beginning of your social-care education, what were your initial impressions? What did you notice?
- Thinking back to the beginning of your social-care education, can you describe 'whom you were'?
- Can you describe whom you are now?

Photo-elicitation using the Inquiry Graphics Framework (as above):

I have four photos I will show you and we will now explore these images using the Inquiry Graphics framework.

Learning using photographs

- What value, if any, do you see in the process of critically 'unpacking' photographs, as we have done here today?

Appendix 6 – Inquiry Graphics step by step questions

	Representamen –led signifier	Interpretant-led (signified) Interpretant-led (signified)		Anchored Object: (led RQ/Goals)	
	STEP 1 Listing	Denotation –focus on core visual meaning of ELEMENTS	**Connotation-focus on contextual meaning of Elements**	**Configuration-composition**	**Object**
IMAGE	Could you **list every detail of everything** you see in the photo? (details: people, object, environment) How many of those can you see? ('Break the image down into constituent parts') FOR EXAMPLE two eyes. Two eye brows, one nose……	Could you give a basic **description** of what you see without getting into the overall meaning? For example: 'The eyes are wide open'	What **meaning** do you attribute to the image based on the **description**? What can be **presumed** from your description? How does the **context** of the image relate to your description? What is the meaning of your description contextually? **[internet search] What words did you use to search?** FOR EXAMPLE: The eyes are wide open, this signals that the person is scared or surprised.	Could you tell me where the elements are in relation to one another? What is it about this **element that prompts you to assign this meaning**? What elements are working together to assign meaning? What **elements** of the image work together to help compose your attributed meaning? What meaning can you attribute to the way the image is presented? (Tone, colour, close-up, far way, central focus, exaggerated parts, style (journalistic, personal, marketing) etc..) What do think is the **function** (*original* intended function) of the image?	Broadly how does the image and your element descriptions and the meanings we discussed relate to a social care concept? What elements of the images are prompting you to think about the ABUSE/DISABILITY/ALL WALKS OF LIFE/REFLECTION concepts? What **feeling** response does the image evoke? What **associations** to social care/abuse (etc.) can you make relating to the image? What is **absent** from the image? In what way does the image represent a **conceptual difficulty**? Is there a **relationship** between the constituent elements and the proposed concept difficulty? **I picked this image based on the concept of….. why do you think I chose it?**

Appendix 7 – Research call. Social Care Graduates and students

Re: PhD Research call for Social Care Graduates and students

Title of PhD research: Threshold concepts and new knowledge perspectives with visuals in Social-care education

Dear_____

I am a lecturer in institute A and currently studying for a PhD at Lancaster University, UK (Department of Educational Research; Doctoral Programme in Higher Education Research, Evaluation and Enhancement). As part of my study, I am researching 'Threshold concepts and new knowledge perspectives with visuals in Social care education' and my Supervisor is Dr Natasa Lackovic.

This letter asks you to share the leaflets enclosed with social-care graduates and students in your service and encourage participation. Volunteers can participate if they have qualified in Social Care (level 7 or 8) or are currently attending any third-level institution in Ireland. **I need at least 20 participants.**

This research involves an interview and to take or select/find photographs of places, spaces, events, objects, situations, that represent an uncomfortable learning experience encountered in a Social-care degree, from any source of choice.

Once a participant expresses interest via email or phone call, an information sheet/video and a consent form will be sent to them. A face-to-face interview will then be arranged at a convenient place. Travel costs can be reimbursed. This research has ethics approval from Lancaster University and Athlone Institute of Technology.

With Social care advancing towards state recognition, this research endeavours to generate new knowledge by focusing on social-care education. **Social-care graduates' and students' participation can make a significant contribution**.

Responses and enquiries to dmacgiollari@ait.ie or [redacted].

Many thanks for your help and kind regards

Denise Mac Giolla Ri

_____

Appendix 8 – Research call. Social care educators/knowledge contributors

Dear Social-care Lecturer,

With Social care advancing towards state recognition, this research endeavours to generate new knowledge by focusing on social-care education. **Your participation can make a significant contribution.**

I am currently studying for a PhD at Lancaster University, UK (Department of Educational Research; Doctoral Programme in Higher Education Research, Evaluation and Enhancement) and as part of my study I am researching '**Threshold concepts and new knowledge perspectives with visuals in Social care education'**. My supervisor is Dr Natasa Lackovic.

This *email/letter* invites you to become a participant in this research. **You can volunteer to participate in an interview if you have in the past taught or are currently teaching on a Social Care programme offered by institute A**. This research is interested in the multidisciplinary aspect of Social-care education, thus I would be delighted to have participants who teach a number of subject areas. This research invites you to take part in an interview about your reflections and experiences of **teaching conceptually difficult** material fundamental to your subject area. It also asks you to select or take a photo/s from, for example, a text book, an object, a PowerPoint slide image you use or an image from the Internet that represents an area of **conceptual difficulty** for the students you teach. The photo/s can be sent via WhatsApp messaging, post, email or brought along to the interview. I will also show you a number

of photographs for comment. Please return expressions of interest by return email to dmacgiollari@ait.ie at any time before the end of --------. I need -----volunteers please.

Once you have indicated your interest in becoming a participant I will send you a participant information sheet and a consent form. I will then seek to arrange a face-to-face interview. This research will involve a 30-45min interview and a review of the transcript for comments by return email.

This research has ethics approval from Lancaster University and institute A.

Please respond to this letter/email by return email to dmacgiollari@ait.ie by ….

Appendix 9 – Ethics Approval: institute A & Lancaster University

Educational Research | Lancaster University

5th April 2019

Dear Denise

Thank you for submitting your ethics application and additional information for **Threshold concepts and new knowledge perspectives with visuals in Social care education**. The information you provided has been reviewed and I can confirm that approval has been granted for this project.

As Principal Investigator your responsibilities include:

- ensuring that (where applicable) all the necessary legal and regulatory requirements in order to conduct the research are met, and the necessary licenses and approvals have been obtained;
- reporting any ethics-related issues that occur during the course of the research or arising from the research (e.g. unforeseen ethical issues, complaints about the conduct of the research, adverse reactions such as extreme distress) to the Research Ethics Officer (Dr Murat Oztok or Dr Natasa Lackovic).
- submitting details of proposed substantive amendments to the protocol to **Dr Natasa Lackovic** for approval.

Please do not hesitate to contact your supervisor if you require further information about this.

Yours sincerely

Kathryn Doherty
Programme Co-ordinator
PhD in Higher Education: Research, Evaluation and Enhancement

Institiúid Teicneolaíochta
Bhaile Átha Luain
Athlone Institute
of Technology

19 March 2019

Denise Mac Giolla Ri
AIT
Dublin Road

Re **Threshold Concepts and New Knowledge Perspectives with Visuals in Social Care Education**

Dear Denise

With reference to the above proposal which was submitted for ethical review to a sub-committee of the Research Ethics Committee. I am pleased to inform you that your proposal was granted preliminary APPROVAL, subject to the following:

- Remove and replace Treasa Fox details from the participant form with the details of the new counsellor.
- Application form says participants will not be observed, the participant info sheet says you can opt not to be observed which suggests that participants will be observed? Clarify
- Who signs the confidentiality agreement attached - not sure how/who it is framed towards?
- Traslation.rev.com are noted in the application for transcript of the tapes; will they sign and NDA/confidentially agreement?
- The audio recordings should be deleted once they have been transcribed unless it goes against Lancaster University guidelines.
- There are three strands to the study so consent has to be clear.

If you have any questions please do not hesitate to contact me or Lorna Walsh for assistance.

Kind Regards

pp. Amanda Murray

Dr Mary McDonnell Naughton
CHAIR - Research Ethics Committee

Appendix 10 – Coding sheet

Major nodes	Sub-nodes	Sub-nodes	Sub-nodes	Notes	RQ
Threshold concepts				*Related to image and verbal data*	*What 'Threshold concepts (TC)' are identified within Social Care subjects and what teaching-learning has been applied or experienced by four key user groups (lecturers, professional experts, current students and recent graduates), via an "inquiry graphics" photo-elicitation research method? To what extent are the identified TCs similar (convergent) and distinct (divergent) among the groups? To what extent are experts', lecturers', students' and recent graduates' chosen photographs to represent TC concepts similar (convergent) and distinct (divergent)?*
	Non-image concepts				

	Characteristics of Threshold Concepts			*TCs similar (convergent) and distinct (divergent) among the groups*	*What characteristics and types of threshold concepts are experienced, identified and reflected on?*
		Transformative			
		Troublesome			
		Irreversible			
		Integrative			
		Bounded			
		Discursive			
		Reconstitutive			
		Liminality			
	Meaning attributed based on description				
	Concepts related to image (general)				
		Image A			
		Image B			
		Image C			
		Image D			
		Participant image 1			
		Participant image 2			
		Participant image 3			
	Visual elements related to concepts (specific)			*Iconic, divergent and convergent*	*How do these different groups interpret the same photographs provided by the researcher as related to the TC? What are salient photographic features reported by participants that lend themselves to conceptual exploration and inferences in the context of research methodology?*

					What is the role of naming elements, denotation and connotation IG reasoning in understanding TCs? *To what extent are their interpretations convergent or divergent and what does that mean for teaching-learning practice?* *What is the role of naming elements, denotation and connotation IG reasoning in understanding TCs?*
		Image A			
		Image B			
		Image C			
		Image D			
		Participant image 1			
		Participant image 2			
		Participant image 3			
	Absent from image				
	Original intended function of image			*Iconic surfacing – switches from personal viewer to potential reading by others in society?*	
		Image A			
		Image B			
		Image C			
		Image D			
		Participant image 1			
		Participant image 2			
		Participant image 3			

	Visual type and function (participant provided)				*What kinds of flexible taxonomies of chosen photographs can be concluded with regard to their content (e.g. showing people) and their function (e.g. metaphor)?*
		Illustration			
		Graphic table			
		Graphic diagram			
		Photograph		*Own or from the Internet?*	
		Function		*What does it do here or what is its main focus?*	
	Visual metaphors evoked in speech				
	Sensory Embodied image				
		Feelings involved			
			Image A		
			Image B		
			Image C		
			Image D		
			Participant image 1		
			Participant image 2		
		Body sensation			
			Image A		
			Image B		
			Image C		
			Image D		
			Participant image 1		
			Participant image 2		
		Movement evoked			
			Image A		
			Image B		
			Image C		
			Image D		
			Participant image 1		
			Participant image 2		

	Student change			*Student reported, lecturer observed, Link to TCs. Themes like maturity, use of language*	
		Factors			
		Via concepts			
		Over time			
Teaching & learning					*What is the potential of an 'inquiry graphics (IG)' teaching-learning method as experienced and evaluated by lecturers and students with regard to teaching SC 'threshold concepts'& 'troublesome knowledge'?*
	Visuals in teaching (general)				
	Potential of IG in teaching				*What characteristics of the method do the participants find beneficial or challenging and why? What stands out for them, if anything? What forms of conceptual knowledge and engagement does it afford, or not?*
		Benefits			
		Challenges			
		Conceptual knowledge affordances			
		Engagement with conceptual knowledge			
		ED reflection on their own knowledge			*How does the method help or not the participants*

					to reflect on their own knowledge …
		Students/grads reflect & evaluate it with regard to overcoming the liminality of TCs			*… and how do the students evaluate it with regard to overcoming the liminality of TCs?*
	Approaches to teaching TCs				
	Challenges to teaching TCs				
	Factors that affect learning TCs				
		Challenging topics		*Triggering*	
		Personal introspection		*New insights based on theory/concepts/practices*	
		Open/closed/or resistant – mindedness			
		motivation to 'help'		*TCs evolve simple concept of 'helping' to complex and professional*	
		Experience		*Placement or personal*	
	Observations about using IG to facilitate learning TCs				*What can be observed about using IG visual content to facilitate learning TCs?*
IG in research	Process of unpacking in interview				*What does this experience and method tell us about how we think about concepts and images? What implications does it have for education? What are salient photographic features reported by participants that lend themselves to conceptual exploration*

					and inferences in the context of the research methodology?
	Process of choosing images				
Themes	Multiple complex concepts				
	Disconnected modules (silos)				
Other	Social class				