

Disconnected in the Digital Age: Barriers to Flow in Online Learning

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Abstract

Disengagement among students learning online in higher education is an enduring challenge that can undermine learning outcomes, retention, and overall satisfaction. While engagement is widely recognized as essential to academic success, the unique conditions of online learning, such as reduced interpersonal interaction, feelings of isolation, and competing external demands, often hinder meaningful participation and enjoyable experiences. Using a hermeneutic phenomenological approach, this study applied flow theory (Csikszentmihalyi, 2008) to better understand the experiences of online students and the barriers to achieving an optimal state of learning. Data were collected through written reflections, interviews, and journaling with Interpretive Phenomenological Analysis (Smith et al., 2022) used to interpret findings of non-flow. The research highlighted how lack of interest, time, resistance to distractions, and prior experience in education prevents students from experiencing flow. This unique, reflective, and human-sensitive methodology encouraged a richer understanding of non-flow and offered insights into the stimuli and inhibitors to flow. The implications for students and higher education providers are encouraging better awareness of distractions and how to focus attention, as well as the potential for gaining experience in industry to nurture interest and personal connection to learning.

Keywords: Engagement, flow, online education, higher education, teacher education

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Student engagement is a cornerstone of effective higher education practice, yet disengagement remains a pervasive challenge, particularly in the online learning environment. Engagement is a multidimensional construct encompassing behavioral, emotional, and cognitive domains which, collectively, can influence students' academic success and personal development (Fredricks et al., 2004). Within this construct, engagement can also be understood through the lens of flow theory, which describes a state of deep focus and immersion that occurs when an individual's skills are appropriately matched to the challenges of the activity (Csikszentmihalyi, 2008). However, achieving this optimal state of engagement in virtual settings may be particularly challenging due to structural, technological, and psychosocial barriers (Redmond et al., 2018).

Flow theory emphasises the importance of clear and focused attention on a task, and a balance between challenge and skill to reach optimal enjoyment, or flow (Nakamura & Csikszentmihalyi, 2002). Through the application of flow theory, a multifaceted approach to studying online engagement could be applied. Each dimension of engagement can be studied simultaneously through flow and how they dynamically interrelate with a students' unique online environment. Csikszentmihalyi (2014) found that when learning is intentional and intrinsically motivated, students experience personal growth from improving the complexity of their skills. However, online higher education students often lack the necessary study conditions, resulting in boredom and frustration, conditions which are un conducive for flow. Research has shown that poorly designed online courses, limited interaction with instructors and peers, and feelings of isolation frequently undermine students' ability to experience engagement, leading to reduced motivation and persistence (Martin & Bolliger, 2018; Rovai, 2002). Additionally, external factors, such as competing work or family responsibilities and unequal access to technology, exacerbate these challenges, further widening disparities in academic outcomes for online students (Stone & O'Shea, 2019a).

Given the increasing prevalence of online education, understanding the factors that inhibit or promote flow is essential. Rather than allowing students to study in boredom, frustration, and apathy, the challenge lies in exploring and understanding how the experience of studying online can be more worthwhile, more enjoyable, and even fun. Research confirms that flow results in not only intrinsically motivated experiences and personal growth but can also improve an individual's wellbeing and mental health (Carpentier et al., 2012; Tse et al., 2021), further highlighting the need for research in this area. The overarching question that drove this study was, what are higher education student experiences with flow in online learning environments? While some participants in this study did experience flow, this article focuses on the inhibitors to students' flow experiences, which are seldom researched through a phenomenological lens. The hermeneutic phenomenological study of flow was a reminder that research which is human centred, respects the voices and experiences of higher education students learning online, and encourages multiple ways of viewing online student engagement (Kumasaka, 2024). By understanding these non-flow experiences, the study aimed to contribute to the growing body of literature that informs strategies to foster meaningful and deep engagement, or flow, in online learning environments.

Background

While higher education is a choice for many adults, it is often thought of as a means to future financial security via meaningful, well-paid employment (Laming et al., 2016). It is unfortunate that many students consider study to be boring and exhausting and are only motivated by the external rewards, as this has been reported to inhibit learning rather than promote it (Bryson & Hand, 2007; Csikszentmihalyi, 1982). As such, students' enjoyment

and motivation related to learning become key considerations for higher education. When students experience flow, they are intrinsically motivated (Engeser & Rheinberg, 2008; Meyer et al., 2016) and thus, the goal is to find activities that are rewarding themselves (autotelic) and not reliant on external incentives. There is limited understanding about how this occurs and the barriers that may limit these experiences for students in the online learning environment in higher education.

Online learning in higher education cultivates a ubiquitous learning environment, making it more challenging for educators to manipulate the social context and other factors that create a physical learning environment which are conducive to flow. The pre-conditions of flow must be fulfilled, and time and resistance to distractions are the most common impediments (Csikszentmihalyi & Csikszentmihalyi, 1988). Students often struggle to dedicate enough time to their studies due to the pressures of everyday living and endless digital distractions which often compromise commitment (Xavier & Meneses, 2022). Csikszentmihalyi and Csikszentmihalyi (1988) believed that partial commitment and energy spent on an activity leads to partial fulfilment and potentially inhibits the flow experience. Although some people may be satisfied with shallow engagement and deriving little satisfaction from their studies, this is not an optimal pursuit of education.

Online Student Engagement

Engagement is a multifaceted and complex term because often its three dimensions - behavioral, emotional, and cognitive - overlap. Dimensions of engagement are not isolated, but dynamically interrelated (Fredricks et al., 2004). Guthrie and Wigfield (2000) and Guthrie and Anderson (1999) reasoned that research on engagement should consider all three dimensions of engagement to allow for a more holistic characterisation of the individual. Further, Muir et al. (2019) advocated for longitudinal studies to capture engagement fluctuations over time. Online student engagement in higher education is not a new field of research; however, most studies have focused on a single dimension of engagement.

Previous research in online engagement in higher education has shown that active student participation, instructor engagement, and effectively designed learning environments contribute to better student engagement and self-efficacy (Allen & Seaman, 2014; Bedi, 2023; Bourelle et al., 2016; Getenet & Tualaulelei, 2023; Moore & Greenland, 2017; Pittaway & Moss, 2014; Stone et al., 2016; Turk et al., 2024). Some studies have argued that observable behaviors (asking questions, frequency of viewing and accessing content, and posting responses on the learning management system (LMS)) are often mistaken for engagement but are not necessarily signs of quality engagement (Dixon, 2015; Hranstinski, 2009). Hranstinski (2009) and Martin and Bolliger (2018) found that quality engagement is a complex process of forming relationships and interactions between the instructor and students and is supported by realistic learning opportunities. Research has identified the importance of understanding student engagement in the online learning environment to assist with issues of isolation and retention (Gray & DiLoreto, 2016; Pinchbeck & Heaney, 2022; Stone et al., 2016; Waugh & Su-Searle, 2014). With rapid changes to digital technologies, such as AI, it is even more important to understand how students engage in the online learning environment.

Flow Theory

The identification of different types of engagement and their significance to online learning warranted further investigation via a research approach that captured and differentiated among three dimensions: cognitive, behavioral and emotional engagement. An extensive range of high level cognitive, behavioral, and emotional engagement indicators (high effort, concentration, happy feeling, interest, and intrinsic motivation) are identified in

flow theory, making flow's application to studies of engagement, where all three dimensions can be studied simultaneously, an appropriate extension of engagement research. Landhausser and Keller (2012) reported that flow theory positively influenced cognitive, behavioral, and emotional characteristics of an individual, which provided potential for the application of flow theory to studies of multidimensional engagement. Through the application of flow theory to engagement research, all three types of engagement in the current study could be explored simultaneously; this provides a new lens to view online student engagement, which few studies have applied to research in this context.

Flow theory explains that when people experience optimal enjoyment from a task, they experience a state of consciousness characterised by deep concentration and absorption with the task, when the task is appropriately challenging for a person's skill level. This is known as "flow" (Csikszentmihalyi, 1975, 2008). A consequence of flow is that the completed activity becomes intrinsically autotelic (that is, rewarding in itself) and the person wants to repeat the activity (Csikszentmihalyi, 1975). Studies using flow have reported that people with autotelic personalities are more likely to experience flow and report high levels of improved wellbeing (Carpentier et al., 2012; Heutte et al., 2021; Tse et al., 2021). Furthermore, Landhausser and Keller (2012) found that cognitive, behavioral, and emotional factors were improved as a consequence of flow experiences, thus making studies of flow highly relevant to engagement research and particularly interesting for understanding how this occurs in the online learning environment.

A variety of interrelated concepts have been studied in combination with flow in the online learning environment, such as the role of flow on learner motivation and behavior in distance education (Liao, 2006), and to predict online students' satisfaction and intention to continue studying (Shin, 2006). Guo et al. (2016) found that telepresence (the feeling of being physically present) was the most important factor influencing flow in online learners in higher education, and Chaker et al. (2022) found that flow experiences resulted in higher achievements and retention of online students in a Massive Open Online Course (MOOC). Most studies on flow in online learning involve quantitative data and lack a holistic understanding of the relationship interplay between the learner and the context.

The Current Study

This study emerged from a desire to move away from the current flow research, which focuses heavily on measuring flow in a variety of diverse contexts through quantitative data (Bakker, 2008; Heutte et al., 2021; Liu et al., 2022; Moneta, 2021; Norsworthy et al., 2021). As flow theory hails from positive psychology, where the research subject is what goes right in life (Seligman, 2002), the primary aim of this study was to explore positive student experiences to better understand what fosters meaningful engagement or flow experiences. Through exploration of flow experiences which have already been reported (see Kumasaka, 2025a), the research also revealed gaps and barriers that hinder flow, making it clear how flow and non-flow experiences are interconnected. Thus, the current paper focuses on understanding these experiences of non-flow and explores the inhibitors to the flow experience. The concept of non-flow in this study is not synonymous with disengagement but rather identifies an experience that may still reflect disengagement or engagement, either behavioral, emotional, and/or cognitive, but for various reasons, does not reflect the unique flow experience, where all three engagement types are experienced simultaneously. In this way, this paper uniquely explores how non-flow manifests in online higher education students and explores the relationship between context and the learner's cognitive, behavioral, and emotional engagement, a key gap in online learning research.

This study assists online education providers by providing practical understanding and recommendations about improving student engagement but also contributes conceptually to flow research. Through application of a humanistic approach - hermeneutic phenomenology - the study offered the possibility of understanding the non-flow experiences in the context of the higher education online learning environments that are not yet well understood and are underexplored in flow research. The uniqueness of the methodologies chosen provided holistic insights into the internal and external barriers to flow which may be overlooked with other methodologies. This unique way of looking at flow and non-flow experiences provides a broader view of student experiences when learning online and does not categorize the experience as either engagement or disengagement, but views students as complex and multi-layered individuals. Rather than viewing the issue as a problem to solve, this approach allowed student experiences to be explored in a unique way and to encourage a more thoughtful and tactful action to be embraced. It allowed a sympathetic exploration of the student experience and an opportunity to discover the extraordinary in the ordinary experiences of studying online.

Methodology

This study used a hermeneutic phenomenological approach, ensuring participants' voices and lived experiences were honoured (Kumasaka, 2024). The study was approved by Curtin University (Human Ethics Approval # HRE2019-0155) and all participants provided informed consent before involvement in the study.

Theoretical Lens

Hermeneutic phenomenology was the most appropriate methodology for this study as it offered a unique perspective about the lived experience of flow or non-flow. It encouraged discovery of moods, emotions, feelings, and sensations involved with participants' experiences and enabled enquiry about how the experience unfolded and what it all meant to the individuals and their lives (van Manen, 1990; Wilson, 2015). The distinction between hermeneutic phenomenology and other phenomenologies is the belief that the individual and their world are inseparable (Heidegger, 1978) and using this hermeneutic approach ensured that the distinctive environment and context of each participant was considered in the study.

Researcher Positionality

In hermeneutic phenomenology, the researcher is not a distant observer but an active participant in the interpretive process. Acknowledging this, we recognise that our own experiences, understandings, and preconceptions are inseparable from the study. Heidegger's (1978) notion of situatedness remind us that interpretation always begins with the researcher's prior knowledge and experiences from living in the world. Thus, rather than striving for objectivity or detachment, we approached this study with an openness to questioning our own assumptions and engaging reflectively with the phenomenon. A process of explicitly identifying our presumptions, based on personal experiences and our own everyday understandings through a reflective journal and memoing were employed.

Our professional backgrounds and pedagogical commitments shaped the lens through which we encountered the participants' experiences. These insights were not treated as biases to be eliminated but as necessary starting points which informed interpretive understanding. Consistent with the hermeneutic circle, a key philosophical concept where interpretation between specific parts inform the whole context and vice versa (Heidegger, 1978), we moved iteratively among our preunderstandings, participants' accounts, and emerging interpretations, allowing each to inform and reshape the other throughout the study (see Kumasaka, 2025b).

This process of interpretation was documented through researcher memos and reflective journaling, which began prior to data collection, continued during data collection, and extended into the analysis and writing stages, enabling development and documentation of interpretations efficiently over the course of the study (Patterson & Williams, 2002).

The research process was transformative, prompting us to reconsider our pedagogical practice and deepening our awareness of how our lifeworld intersects with the phenomena we seek to understand. The hermeneutic tradition also included a final reflection, and it was insightful and transformational to see our initial presumptions about how students engage with online learning had been overturned. As such, the knowledge produced is not static or detached but is a living, dynamic reflection of the interplay between researcher, participants, and the world we share.

Context and Participants

Participants in the study (N = 596) were enrolled in an Australian public university in a fully online teacher education program. Participants were from undergraduate and postgraduate programs, both male and female, with ages ranging between 18-50+ years and residing in locations across Australia. Two undergraduate units and two postgraduate units were identified and deemed appropriate, which included students who had already completed their first year at university, to ensure participants had adequate time to experience fully online study. Most participants were first-time online students, and many were also first-time students to higher education. All 596 students across four units were offered the opportunity to participate in any of the four reflective writing opportunities and invited to an interview. A large sample size was originally pursued to accommodate participant attrition and fatigue over the course of the study. The researchers were not involved in the units selected and did not instruct nor provide grades to the students in the study.

Data Collection

Hermeneutic phenomenology requires reflection and description of the experience; therefore, complementary techniques were used to collect first-person accounts of participants' lived experiences with flow or non-flow in the online learning environment. Stage 1 consisted of collecting written reflections at four different intervals across the twelve-week teaching period. The "Flow Question" (Csikszentmihalyi & Csikszentmihalyi, 1988), which describes a flow experience, was used as a prompt for participants to write reflectively about their experiences. Students in the four identified units were sent an email inviting them to participate in the study with a link to the reflective writing activity which could be completed online. A total of 81 participants responded to the Flow Question (n = 81): "Consider the three situations below and have you have felt this way over the past 3 weeks when learning online"?

- My mind isn't wandering. I am not thinking of something else. I am totally involved in what I am doing. My body feels good. I don't seem to hear anything. The world seems to be cut off from me. I am less aware of myself and my problems.
- My concentration is like breathing. I never think of it. I am really quite oblivious to my surrounding after I really get going. I think that the phone could ring, and the doorbell could ring, or the house burn down or something like that. When I start, I really do shut out the whole world. Once I stop, I can let it back in again.
- I am so involved in what I am doing. I don't see myself as separate from what I am doing.

(Csikszentmihalyi & Csikszentmihalyi, 1988)

If participants answered “yes” to the question, it was identified as a flow experience and they were asked to write reflectively describing that experience. If they answered “no” they were still asked to write reflectively about their online learning experience during the previous 3 weeks. By the end of the teaching period 129 written reflections were captured. Stage 2 of data collection consisted of semi-structured interviews (male, $n = 3$, female, $n = 5$) conducted fully online using WebX. These interviews ranged from 35 minutes to 1 hour and 20 minutes in duration and were recorded. Interviews could only be conducted with participants who provided consent, and eight participants were interviewed. As the interviews were focused on the idiographic experience (the individual) with the phenomenon, interview questions differed among individuals and questions were often leading, based on the participants’ written reflections, which made each interview unique. In hermeneutic phenomenology, this is completely expected with interviews and acceptable practice (Patterson & Williams, 2002). Researcher memoing, journalling, and field notes were also used during the phenomenological process of collecting and interpreting the data.

Data Analysis

Data were analysed by adapting Smith et al.’s (2022) interpretive phenomenological analysis (IPA) approach. Analysis and interpretation were not isolated processes completed after data collection as in traditional research, but were, rather, iterative processes conducted throughout the entire study. Through the researcher’s reflective journal and notes, ideas and interpretations were tracked as they occurred. The frequent moving back and forth between understanding specific parts of the data and the whole, applying the hermeneutic circle tradition (Heidegger, 1978) ensured that the interpretation contributed to the development and understanding of the phenomenon in the study (Kumasaka, 2025b).

To analyse the data through the IPA process, initial interpretations and exploratory notes were identified from the written reflections, and the interview data and written reflections for each of the eight interviewees were combined. Personal experiential statements were clustered and themes were developed. After individual analysis, cross-case analysis and group experiential themes were developed. Finally, a variety of interpretive and descriptive texts were created to communicate the findings for the phenomenon of flow in a narrative style. However, if flow was not experienced, no narrative was created. For the purposes of this paper, group themes which were identified and interpreted as non-flow or inhibitors to flow are reported and discussed here.

Results

The study revealed that flow is an elusive experience for students studying online with approximately three-quarters of participants unable to experience it. This does not mean that these participants were necessarily disengaged but that their engagement experiences were varied and complex. Some participants displayed high levels of behavioral, emotional, and/or cognitive engagement, but still did not experience flow. The findings revealed several key group themes which were barriers to flow experiences in this study, such as lack of time, resistance to distractions, personal characteristics, lack of supportive relationships, and lack of interest and prior experience in education. The findings revealed new insights, such as the importance of prior experience in the relevant industry and supportive relationships in fostering flow, highlighting the importance of the social and emotional dimensions to learning online.

Lack of Time

Just over half of the participants found that time was an inhibitor to their experience studying online and time was the leading barrier to flow in this study. Participants reported “my work and family commitments mean that I don't have the time available”. Having time to study was an important recognition for many participants in this study who either consciously made time in their busy schedules to focus on study or relayed simply not having enough time to study. It was clear that participants who experienced flow deliberately dedicated enough time to study, reporting “once a week I have a dedicated day”, and those who did not prioritise enough time were not able to experience flow, a finding which confirms the precondition of time for flow. Although this does not mean that all students who prioritised time experienced flow, but that when appropriate time was allocated to study, it appeared to improve student enjoyment, satisfaction with learning, and quality of work produced.

Resistance to Distractions

The second most reported barrier to flow in this study was the inability to resist distractions and participants reported “when you're studying at home you have to coexist with all the things that are in your life, that could be the laundry you're staring at, or the cat meowing. You can't separate yourself from your environment”. Approximately one quarter of the participants in this study reported being distracted as a major impediment to their quality time spent studying, stating “checking a recipe, checking Instagram, start chatting to someone”, and “other requirements of my daily life consume me”, which could have inhibited their ability for flow experiences. Findings identified that family and technology were the biggest distractions and posed challenges to quality time for study and flow experiences, which left participants feeling helpless or out of control. While some participants' procrastination can be interpreted as lack of interest in their learning, it also reflects their lack of intrinsic motivation, an attribute commonly associated with flow.

Personal Characteristics

Not all personality traits are conducive to flow experiences, and this was reflected in the participants in this study. Through observations and interpretations of the data, some participants displayed characteristics of over-thinkers and showed lack of confidence in themselves with one participant stating, “I question everything” and another participant reported, “I find myself waking up at night thinking about the unit tasks what I could do better or have I done certain things right”. These students displayed some concerning mental health issues related to their lack of success or misunderstandings of learning processes, particularly associated with online learning expectations. Similarly, another participant explained his learned ability to concentrate deeply was because of his cognitive behavior therapy and mindfulness strategies to treat his anxiety, stating “I do a lot of meditation”. This treatment enabled him to experience improved behavioral engagement through better focus and ability to pay more attention to his learning which provided a more positive learning experience for him. However, this excessive attention on managing his thoughts inhibited the flow experience due to the excessive regulation of thoughts, limiting his ability to lose himself in the task, much like the over-thinkers.

Lack of Social Presence

In this study, lack of social presence, in the form of supportive relationships, represented a key inhibitor to flow. Participants who did not experience flow predominantly conveyed their lack of interest in, or any need to, interact and form relationships with their peers, stating “I really try to talk to them the minimum possible”. Interestingly, while this

participant expressed his desire for critical discussion and problem solving with others, he stated he was not interested in interacting with his peers online, reflecting his lack of willingness to communicate differently in the online learning environment, despite previous success and enjoyment from this in his first degree when he learned face to face. These non-flow participants also reported fewer online interactions in general with their peers attributed to several reasons. One participant said it was due to their introverted personality, but other participants reported they experienced anxiety at the thought of interacting with anyone on the LMS, reporting “fear of appearing stupid” as a major contributor. Some participants showed little interest in forming relationships with their peers and felt like it brought no benefit to their learning, stating “it just wouldn’t benefit me in any way I think”.

The findings did not indicate that students learning with their peers influenced flow experiences but instead contributed to their emotional and cognitive engagement and sense of belonging to an academic community of support. One participant stated that “working with another student and having to explain where you are coming from and compromise and listen to their ideas and stuff, I found hugely valuable”. Another element of support found among flow participants was social and emotional support from family members with experience at university, or work colleagues who typically worked in the education industry. One participant remarked that “thinking about how excited I have been to tell colleagues what I’ve learned” and “if you don’t have access to teachers or other people doing postgrad work, I don’t know how you’d get through it”. Interestingly, however, among non-flow participants, these supportive relationships with others outside the formal academic community were absent, and many of these students appeared to lack enjoyment and purpose from their learning.

Lack of Interest and Prior Experience

Participants who experienced flow in this study were interested in the content they were learning and spent more time and attention on activities, which facilitated flow experiences. Lack of interest in the content was a major inhibitor to flow, with participants reporting “it’s not something that I’m super intrigued about” and “interest in the subject is a major influence. I procrastinate more when it’s something I may not, in particular, enjoy as much”. This lack of interest in their content deeply affected the participants’ ability to enjoy learning and limited their behavioral engagement. However, other factors also contributed to their lack of interest. Participants who displayed interest in their learning and experienced flow had prior knowledge and experiences in a professional education setting, which made them feel personally connected to what they were studying. Some participants already held roles in schools, and this brought additional relevance to their learning; as one reported, “I’m reading that for my own benefit and applying it to the things that happen in my classroom”. Paradoxically, all the participants who did not experience flow also did not have any prior knowledge and experience in professional education settings and, in fact, displayed many negative preconceived ideas about the content of their learning. This ultimately appears to have influenced participants’ closed mindset, lack of motivation, interest, personal connection to their studies, behavioral engagement, and flow experiences (Kumasaka, 2024).

Discussion

The finding in this study related to lack of time aligns with Csikszentmihalyi’s (2008) research, who reported that time is one of the most commonly mentioned components of flow among those who experience it. When time is dedicated to an activity, deep involvement is encouraged, resulting in concentration and flow. Adversely, if one does not have enough time,

flow is inhibited. Online learners are mostly non-traditional mature-aged students, and usually their family and work commitments are greater than on-campus students', which effects the time available for study (Greenland & Moore, 2014; Ragusa & Crampton, 2017). Not surprisingly, these students must balance multiple roles and tasks and are often very time poor. Xavier and Meneses (2022) reported that time was a significant challenge to higher education students studying online, and Veletsianos et al. (2021) found that students needed to be more realistic with time commitments required to be successful when studying online. These same findings were confirmed as an inhibitor to flow in this study and highlights the significance of educating students on the importance of study techniques and realistic time requirements.

Csikszentmihalyi (2008) found that the ability to resist distractions encourages deep concentration and can focus attention, which enables flow. The finding in this study of students' inability to resist distractions highlights the paradox that technology has brought with it and the implications for inhibiting flow. Digital technologies offer many students the flexibility of online learning but also bring many distractions. Meishar-Tal et al. (2022) found that mobile phones, among other digital and environmental distractions, were the most common distractions to higher education students. These findings reflect the need to assist and educate online students, particularly in their first year of study, about how to manage the distractions that technology brings and support them in learning how to focus their attention on the learning task and develop good study habits early. Mrazek et al. (2012) found that mindfulness training can reduce mind-wandering behaviors. However, mindfulness requires significant regulation of attention to focus on the techniques, which inhibits the flow experience (Csikszentmihalyi, 2008; Csikszentmihalyi & Nakamura, 2010) therefore, other strategies to focus attention should be encouraged. Often, higher education online learning providers have an expectation that students will be able to learn appropriate strategies to study for themselves and that high levels of engagement, such as flow, will occur. This highlights the need for higher education providers to assist students in learning appropriate study techniques and educating them on strategies that will assist with task focus and resistance to distractions.

Some participants who experienced non-flow in this study reflected common characteristics of overthinkers. Interestingly, participants who showed overthinking tendencies (an inhibitor to flow), were mature age women. Studies have confirmed that mature age women students are more likely to experience identity struggles, as they find a fit between their roles and commitments, often resulting in anxiety and tension (Edwards, 1993; Moss, 2004; Stone & O'Shea, 2019b). Constant worry about doing something wrong or how others will perceive them indicates a lack of flexible thinking, behavior, and of an autotelic personality which, in this study, caused lack of confidence and mental health concerns for women. Csikszentmihalyi (2008, p. 85) described this type of personality as typical of someone who uses too much energy and thinking of self, as having "excessive self-consciousness". Further, people with this personality type cannot easily enter flow or experience deep enjoyment, when attention is too rigid and tight. This not only impedes flow but also prevents personal growth, making learning more difficult. This finding is a significant reason for further research into fostering better psychological supports for women as they enter higher education, particularly as mature students.

Similarly, cognitive behavior therapy and mindfulness strategies also reflected an impediment to flow. During use of these strategies, constant monitoring of thoughts is required and this "excessive regulation" of the conscious mind, prevented focused attention on the task. Like the overthinkers, when thoughts are constantly monitored and too rigid, it

prevented loss of self during the activity (Csikszentmihalyi, 2008, p. 85). While one participant experienced deeper cognitive engagement with learning, excessive regulation of thought limited opportunities for flow and associated growth. Despite increasing student use of mindfulness techniques intended to assist with focus and learning, the findings in this study contradict this strategy and encourages alternative techniques which do not require excessive thought, such as breathing techniques, to improve attention and cognitive engagement leading to opportunities for flow. These findings also reflect that mental flexibility facilitates flow experiences, although this may not be an option for some individuals, as certain personality traits are inherited and some people lack the suitable cognitive flexibility and openness which flow requires (Csikszentmihalyi, 2008; Kashdan & Rottenberg, 2010).

The isolation and frustration of online learners due to the inherent lack of social interactions and presence in this environment is often reported (Lambrinidis, 2014; Sung & Mayer, 2012) along with the challenges of developing social and emotional relationships for support (Garrison, 2007). Research on presence in education has reported the importance of social relationships to learning (Garrison, 2003, 2007; Glazier, 2016; Jones, 2010; Robinson et al., 2017). Previous research has described the challenges of forming social and emotional relationships for support in the online learning environment and how the face-to-face learning environment provides better opportunities for this (Garrison, 2007). Recent research has focused on the use of synchronous video communication and how telepresence brings the feeling of physical presence to online environments, which can influence flow experiences (Guo et al., 2016). This was contradicted in the current study; while telepresence influenced emotional engagement through positive online interactions between instructor and student, it did not influence the flow experience. The findings in this study reflect the need for supportive relationships for emotional and cognitive engagement but also highlighted diverse student needs and revealed that students who desired positive working relationships with their peers to support engagement would seek them out from a variety of sources, such as peers, family, and colleagues working in industry. The findings also identified that while peer-to-peer relationships positively influence emotional engagement, they do not influence flow, highlighting a tension for educators in higher education: encouraging positive relationships between peers may be helpful but limited.

A new finding from this study reflects students' need for supportive relationships from knowledgeable others outside the formal academic community to foster emotional engagement and flow. This supportive relationship could be with someone from the education industry or someone with prior experience in higher education. Stone and O'Shea (2019b) recognised that since most online students are mature age and often first in the family to participate in higher education, many students may not have access to others with higher education experience. Often, these students have higher expectations of support from within the formal learning environment, such as the instructor, and do not look elsewhere for academic supports (Ragusa & Crampton, 2017). However, when supportive relationships were absent, participants did not experience flow which, at times, led to limited behavioral and cognitive engagement and even stress and poor mental health in some students. Future higher education students in online environments could be encouraged to establish a support network with people outside of the formal learning environment who may be able to relate to the content or their experiences. In addition, these supportive relationships should be able to do more than just provide social and emotional support, but also encourage confidence in students to discuss, clarify, and reflect on learning via face-to-face interactions, nurturing

intellectual curiosity and self-efficacy and facilitate positive experiences towards learning.

A key finding related to interest and prior experience in education and its influence on flow suggests this could be an under-researched area in this context. Studies of prior experience and effect on flow have been limited to online gaming (Cowley et al., 2019; Palomaki et al., 2021) but show that increased experience with an activity improves learning and enhances flow. Cognitive psychology has recognised the influence of prior experiences on learning and research on information-processing theory suggests that students direct more attention to learning when it fits with prior knowledge (Knowles et al., 2020). This was reflected in the current study when those who experienced flow appeared better able to direct their attention, connect their learning with prior experiences, and nurture interest than those who lacked any prior knowledge nor experience in education. Those participants who appeared less interested directed less attention to their learning, resulting in fewer opportunities for flow or no flow at all. For many of these participants, this led both to reduced engagement and less learning enjoyment; in some cases, students questioned the meaning of a course and related learning. It seems that participants who lacked interest or knowledge of the education industry lacked purpose and meaning, resulting in confusion, apathy, or, at times, stress.

Participants in this study who did not experience flow displayed not only reduced interest but also lacked personal connection and meaning to their studies. This could be attributed to their lack of prior experience and knowledge of education, as the flow participants reported these factors as contributing to their success, attributing a perceived advantage over other students to their current roles in educational settings. Non-flow participants had no prior experience in the education industry. The postgraduate participants, although they had prior experience in other diverse industries, such as business and medicine, this influenced their perceptions of education, some negatively. Preconceived ideas about the education industry and lack of experience with it negatively influenced behavioral engagement and affected how immersed or involved in their learning they could become. The role of experience in an industry prior to enrolment in the relevant course of study is a new finding which could have wide ranging implications for higher education institutions. While it is unlikely that prior experience in industry can be mandated for enrolment in a course, higher education providers could do more to ensure that courses are connected to industry and provide not only learning experiences that replicate authentic industry work but also encourage students to volunteer in industry related fields to gain valuable experience. This could nurture students' interest in their chosen field and foster relationships for student support from knowledgeable others, resulting in greater success in their course, improving behavioral engagement and more flow experiences.

Conclusions and Recommendations

There is no doubt that with the increasing landscape of online learning in higher education and the rapid development of technology, the conundrum of technology deepens. Technology is the tool online students must use to learn but is the very same distraction that will remove any chance of flow. Higher education institutions could do more to improve student education around realistic expectations for online learning (Jefferies & Hyde, 2010; Ragusa & Crampton, 2017). This could involve providing modules that talk about appropriate environments for study and time required for effective learning, deep engagement, and flow. In addition, educate students on the importance of managing distractions from mobile phones, social media, and family.

Furthermore, higher education institutions could create more units, particularly in students' first year of study, which include the importance of appropriate study techniques, the importance of focusing attention on learning tasks, and strategies to achieve focused attention, such as breathing techniques and yoga which research reported as influencing attention and improved cognitive responses (Ma et al., 2017; Velikonja et al., 2010). These units could also ensure students learn about access to databases and free resources, as this was identified as having importance to both online learners (Anderson & Cuttler, 2020) and flow. (Kumasaka, 2024). These study technique units should be delivered throughout the course to reinforce the notion that study techniques are intrinsic to their degree and important to develop since they foster flow throughout their courses of study.

Another key finding highlights the importance of relationships outside the class itself since an emotionally engaged support network can enhance learning. If students do not have access to knowledgeable others in an education-related professional setting, they could consider developing a trusting relationship with a mentor teacher during professional experience placements or become involved in a mentoring program, if available. Students should be encouraged to form supportive relationships with peers outside of the formal learning context and become involved in peer support programs if available, as student success with these programs has been reported (Horvath et al., 2019). These could include final year students mentoring first year students and the possibility of cross-institutional mentoring.

New findings from this study suggest that higher education providers could also offer experiences in the education industry to their students to nurture interest. Strategies could be adopted, such as encouraging students to volunteer their time in a professional setting, particularly if they lack prior experience or involvement in the education industry upon enrolment in their course. This could provide an authentic environment for students to experience, increase student interest and investment in their field and create opportunities for supportive relationships to develop. This could improve students' connection to their learning, which may improve self-efficacy, foster motivation, and expand engagement and flow experiences.

This study has proposed several actions that could be undertaken by higher education providers and students, summarised in Table 1. Further research is needed to explore the impact of these actions on student flow experiences across various fields of study and disciplines, particularly those without embedded professional or industry placements. Future research could also include longitudinal studies of tracking flow experiences across the duration of students' studies and the impact this may have on learning outcomes and retention across diverse programs.

Table 1

A Summary of the Barriers to Flow and the Implications to Education Providers and Students

Barriers to flow	Implications
Overthinking and excessive thought regulation strategies	Institutions should create courses with psychological safety as a key consideration. Students should consider mindfulness and self-monitoring strategies carefully and their placement in courses.

Time	Institutions could provide specific modules in first year of courses, which educate students on the time required for effective learning.
Distractions such as family and technology	Institutions could provide modules on study techniques and how to focus attention, such as breathing and yoga.
Relationships for support from 3 sources: - education industry colleagues - family members - peers	Program leaders could educate and foster student development of these relationships through: - mentor teachers from professional experience placement - mentoring programs - peer support programs
Interest in the content	Instructors and Program leaders could provide strategies to students to encourage interest and gain experience in the school setting, by volunteering at a school and personalising content.
Prior experience in education industry	Program leaders encourage strategies for students to gain experience such as volunteer in a professional setting.

Limitations

There were several limitations identified that may have impacted the research. One issue may be the limited interview data collected which cannot be generalised. Interviews were voluntary, and this could have limited the diversity in responses. The researchers attempted to mitigate any bias by interviewing four undergraduate (two males and two females) and four postgraduate (one male and three females) participants who had volunteered and provided consent. Ultimately, this was largely dependent on participant availability and willingness to volunteer. This could be a limitation in a traditional research sample; however, the hermeneutic phenomenological approach is not concerned with aspects of an individual but is more focused on the experiences of the individual with the phenomenon, which partially mitigates this limitation.

Another limitation is that since data were collected, the use of artificial intelligence (AI) has saturated the higher education sector. While AI offers many enticing benefits, it also brings with it many challenges to engagement, assessment, and task design (Wang, 2023). As flow relies on many different variables, the use of AI in learning is unlikely to have affected the flow experience, as it offers no skill-challenge task, a requirement of flow. Although it is possible that AI could have altered the number of participants in this study, it is unlikely to have affected the quality of the flow experiences during the study. Equally, it would be interesting for future research to reexamine flow in the online learning environment and its influence on behavioral, emotional, and cognitive engagement, due to this change.

Summary

This study sought to explore multi-layered engagement in online higher education students through the lens of flow. Flow experiences have the potential to improve online

student experience and outcomes in higher education contexts, in addition to improving student well-being (Csikszentmihalyi, 2014). Consequently, the application of flow theory to this study through a phenomenological approach had significant findings for researchers of flow theory, the higher education institutions and online students. Additionally, this study enriched the understanding of human experiences with non-flow in the online learning context and provided academic and practical insights for researchers and educators in this field.

Declarations

Ethics Statement

This study was conducted in accordance with recognized ethical standards. Informed consent was obtained from all participants, and data were collected and reported with respect for confidentiality and anonymity. This study was approved by Curtin University Human Ethics Approval # HRE2019-0155.

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Conflicts of Interest

The authors declare no conflicts of interest related to the research, authorship, or publication of this article.

AI Use

No generative artificial intelligence was used in the preparation of this manuscript nor in the research project.

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