Heutagogy and digital media networks: Setting students on the path to lifelong learning

Lisa Marie Blaschke
Center for Lifelong Learning, University of Oldenburg, Germany.

Stewart Hase
Stewart Hase and Associates, NSW, Australia.

The combined trends of learner-centred teaching and ubiquitous technology use in the classroom have given instructors a unique opportunity to support students in developing lifelong learning skills. Heutagogy (or self-determined learning) provides a promising framework for capitalizing on these developing trends, drawing on established learner-centred education theories that strongly emphasize learner autonomy. The key principles of heutagogy – learner agency, self-efficacy and capability, reflection and metacognition, and non-linear learning – provide a foundation for designing and developing learning ecologies, the potential of which can be further maximized through the use of digital media. This article describes the theory of heutagogy and the learner-centred pedagogies on which the theory is founded, as well as providing an explanation of the pedagogy-andragogy-heutagogy (PAH) continuum and its use in developing student skills. It also explores the role of social media in supporting the development of those skills.

Introduction

In a relatively short period of time, we have moved from a situation where very few people had access to information and knowledge, to one where both are easily accessible. With low levels of literacy and books in short supply, people once had to rely on teachers and with the advent of mass education, on codified knowledge. Agency, with respect to learning, was in the hands of others and, still is, to a large degree within formal education systems. However, the technological revolution has dramatically changed how we can access and share information, knowledge, and skills. We are now able to reside in learning ecologies that emerge and expand according to context and demand. The learner has agency to join and develop these ecologies, and our educational systems are being challenged to adopt new learning and teaching approaches that maximize technological affordances.

One recent contribution to how we think about creating learning experiences is heutagogy. Heutagogy is the study of self-determined learning and applies a holistic approach to developing learner capabilities with the learner serving as, "the major agent in their own learning, which occurs, as a result of personal experience" (Hase & Kenyon, 2007, p 112). Heutagogy was developed as an extension to andragogy (Hase & Kenyon, 2000) and builds on theories such as constructivism, humanism, capability, connectivism, systems thinking, complexity and the neuroscience of learning (see Blaschke, 2012; Blaschke & Hase, 2015; Hase & Kenyon, 2007; Hase, 2014, 2016). Central to these theories is the learner agency and the ability of the learner to choose his/her pathway to learning.

Together with the affordances provided by digital technologies (Blaschke & Hase, 2015; Eberle & Childress, 2009; Jaakkola, 2015) and, specifically, social media (Blaschke, 2012; 2014b; Cochrane et al, 2014; Cochrane & Narayan, 2014), heutagogy is an appropriate learning framework for 21st century learners and educators, who wish to take an active role and approach in the learning process, and technology has the potential to drive educational innovation such as heutagogy (Gerstein, 2013). This article will describe heutagogy and its principles, as well as heutagogy's relationship to learner-centred and net-aware teaching and learning approaches, as a generative process supporting learner agency and the development of lifelong learning ecologies through digital media use. In addition, the article will describe the pedagogy-andragogy-heutagogy (PAH) continuum and practical approaches for moving learners along the continuum, thus enabling them to become more self-determined learners.

The Foundational Principles of Heutagogy

At the heart of heutagogy is humanism and *learner agency*, where "the power to learn is firmly in the hands of the learner and not the teacher" (Hase & Kenyon, 2013, p. 20, Bandura, 2001; Maslow, 1943; Rogers, 1961), and promoting that agency in formal and informal learning settings. Maslow (1943) believed that humans have an innate desire to achieve a state of self-actualization throughout their lives, that is the, "working out of one's own fundamental personality, the fulfilment of its potentialities, the use of its capacities, the tendency to be the most that one is capable of being" (Loc 908). Another humanist, Carl Rogers (1961), found that human beings have a natural propensity to learn, and he encouraged placing the learner at the centre of the education process, going so far as to suggest the elimination of grades, credits, examinations, and even teachers. Humans are hard-wired to learn from birth, and they do so by, *inter alia*: exploring, hypothesis making and testing, failing, using a variety of senses, doing, playing or working with others – vicariously and in concert with emotions (Hase, 2014, 2016). Heutagogy takes these factors and others from neuroscience and then applies them in designing learner-centred learning experiences (Blaschke & Hase, 2015; Hase, 2016).

Bandura (2001) described agency as follows:

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

According to Bandura (2001), human agency is characterized by: intentionality (activity that will be performed in the future), forethought (considering what could happen as a consequence of an action), self-reactiveness (beliefs and self-efficacy that guide the action and what and how it will be performed), and self-reflectiveness (examining and reflecting upon the consequences and meaning of actions). Bandura (2001) underscored the importance of learner agency, stating that, "people are not just onlooking hosts of internal mechanisms orchestrated by environmental events. They are agents of experience rather than simply undergoers (sic) of experience…The human mind is generative, creative, proactive, and reflective, not just reactive." (p. 4).

Learner agency is at the core of heutagogy, underlying and permeating every aspect of the theory. Within heutagogy, students are encouraged to take responsibility for the learning design and pathway, while instructors facilitate learning and encourage learner action and experience in a supportive, non-threatening environment (Hase & Kenyon, 2000). As heutagogy places the student at the centre of the learning experience, the theory is closely aligned with a humanistic educational approach where the learner is the agent of his/her learning.

Another component of heutagogy is *reflection*, characterized by single-loop and double-loop learning, where the learner reflects not only on what is learned (single-loop learning) but also on how it is learned and how this knowledge influences one's value system (double-loop learning) (Schön, 1983, 1987; Mezirow & Associates, 1990; Blaschke & Brindley, 2011). Education is ongoing, based on a process of continuous learner inquiry and trial-by-error, with a broad acceptance of failure as a critical means for learning.

Yet another principle of heutagogy is *capability*. According to Stephenson & Weil (1992):

> Capable people have confidence in their ability to (1) take effective and appropriate action, (2) explain what they are about, (3) live and work effectively with others and (4) continue to learn from their experiences, both as individuals and in association with others, in a diverse and changing society. (p. 2)

Capability should not be confused with competency, which is a stepping stone toward capability. While competency can be considered the ability of a learner to perform a certain skill or activity, capability is the ability of the learner to demonstrate their competency in unfamiliar and unique contexts (Hase & Kenyon, 2007). Hase & Kenyon (2013) described competencies as building blocks of learning, and capability as the ability to use those competencies in new environments:

> Capability involves using competencies in new contexts and challenging situations. It is about the unknown and the future, rather than the routine…Competencies are the building blocks of learning but our life experiences, serendipity, challenges, the unknown future, things outside our control, make us do more with these building blocks. (p. 25)

Advances in neuroscientific research have made it possible to more accurately describe the conditions that facilitate human learning, suggesting that learning is enhanced when learners can explore and reflect, create their own learning, drive learning, link learning to previous learning, actively test information, form an emotional connection, make use of their senses, consume information in bite-sized chunks, and be socially engaged (Blakemore et al, 2005; Hase, 2013, 2016; Gazaniga et al, 2019; Tokuhama-Espinosa, 2011). These conditions, supported by neuroscience, reinforce the underpinning theory, principles, and applications of heutagogy. Ultimately, heutagogy posits that giving responsibility of the learning process to the learner (learner agency) has the effect of encouraging development of learner self-efficacy and capability, as well as cognitive and metacognitive skills such as critical thinking and reflection – with the underlying goal of developing reflective practitioners and autonomous lifelong learners.

Heutagogy and the Learner-Centred Pedagogies

The rising popularity of student-centred teaching and learning has created renewed interest in established educational pedagogies that focus on supporting learner agency. These pedagogies include theories such as self-efficacy, self-determination, constructivism, and self-directed (andragogy) and self-regulated learning. As pedagogies that develop learner agency, they are foundational to self-determined learning (heutagogy). The following section gives an overview of these learner-centred pedagogies and their relationship to self-determined learning.

Self-Efficacy

While efficacy is the ability to achieve a specific outcome or outcomes, self-efficacy is one's belief in or perception of his/her ability to achieve that outcome (Bandura, 1977). How a learner perceives individual self-efficacy depends upon the learner's view of his/her abilities, which can be based upon factors such as, "personal accomplishments and failures, seeing others who are seen as similar to oneself succeed or fail at various tasks, and verbal persuasion" (Olson & Hergenhahn, 2009, p. 338). Bandura (2001) believed that self-efficacy influences learning behaviour and the learner's intention to learn, creating an environment of intrinsic reinforcement where those, "with high perceived self-efficacy try more, accomplish more, and persist longer at a task than those with low perceived self-efficacy" (Olson & Hergenhahn, 2009, p. 338). A learner's perception of individual self-efficacy can then restrict learning, by influencing the level of effort learners will expend and their persistence when confronted with adversity (Bandura, 1977). Bandura (1977) further argued that to sustain self-efficacy, learners must be capable of mastering activities in a self-directed way; this self-direction exposes learners to potential threats, improves coping skills in challenging situations, and can result in positive experiences of success.

Within heutagogy, self-efficacy plays an important role in influencing learner behaviour and development. When learners are given agency and autonomy in their learning, they make independent choices, reinforcing and developing their perception of self-efficacy due to individual mastery of activities through success and failure. As self-efficacy increases, learners' perceived sense of their ability to perform likewise develops.

Self-Determination

Closely related to learner agency and to self-determined learning is Deci and Ryan's (2002) theory of self-determination, in which they describe individuals as having a desire for ongoing self-development both autonomously (through self-regulation) and in relationship to others (within social contexts). The theory identifies three central needs – "competence, relatedness, and autonomy" – which encompass the human desire for self-development (p. 6).

Heutagogy encompasses important aspects of Deci & Ryan's theory of self-determination, such as learner autonomy, intrinsic and goal-setting motivation, self-regulation, and self-efficacy, while incorporating additional principles – such as self-reflection and meta-cognition, double-loop learning, learner

competency and capability, non-linear learning and teaching, and neuroscientific evidence of how we learn (Blaschke, 2012; Blaschke & Hase, 2015; Hase, 2016; Hase, 2013).

Constructivism

In social constructivism, learners gain knowledge as they move from the known to the unknown (Olson & Hergenhahn, 2009). New knowledge is built upon on a learner's past knowledge and experiences, and the learning process is unique and active, as well as individual and contextual, "dependent upon their (the learners') individual and collective understandings, backgrounds, and proclivities" (Dron & Anderson, 2014, p. 43).

When applied in practice, a constructivist approach is learner-centred and characterized by elements like: active and authentic learning, learning-by-doing, scaffolded learning, and collaboration (Harasim, 2011, pp. 68-73). The primary goal of learning is to create meaning for the learner, accomplished by integrating contextual elements into learning activities, promoting knowledge construction, including multiple perspectives, and supporting collaboration, conversation and engaging dialogue, inquiry and problem-solving (Dron & Anderson, 2014; Jonassen, Davidson, Collins, Campbell, & Bannan Haag, 1995).

Constructivism's learner-centred approach and focus on learner exploration, inquiry, and open-ended learning are also characteristics of heutagogy, where the instructor adopts a coaching role, scaffolding the learning process and guiding the learner from the known to the unknown. In this way, students are, "creative, actively involved in their learning and there is a dynamic rather than a passive relationship between the teacher and the learner" (Hase & Kenyon, 2013, p. 21).

Self-Directed Learning

The concept of andragogy was made popular by Knowles (1975) and stems from the belief that pedagogical approaches for teaching adults should be fundamentally different from those for children. His ideas are based on the view that the more mature a learner becomes, the more self-directed the learner will be in his or her own learning. Knowles (1975) defined andragogy as:

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

Knowles (1975) advocated choice, flexibility, and autonomy for adult learners and encouraged various kinds of learner support (tutoring, advising, counselling) in order to personalize and individualize an otherwise uniform system of education.

Similar to humanism and self-determination, andragogy, "assumes that learners are motivated by internal incentives, such as the need for esteem (especially self-esteem), the desire to achieve, the urge to grow, the satisfaction of accomplishment, the need to know something specific, and curiosity" (Knowles, 1975, p. 21).

Heutagogy takes andragogy a step further, moving learners along a continuum from more structured, less autonomous educational environments to environments of high autonomy with little or no structure (Blaschke, 2012; Garnett, 2013; Luckin et al., 2010).

Self-Regulated Learning

In self-regulated learning, "students are self-regulated to the degree that they are meta-cognitively, motivationally, and behaviourally active participants in their own learning process…students monitor the effectiveness of their learning methods or strategies and respond to this feedback" (Zimmerman & Schunk, 2001, p. 5). Self-regulated learning primarily focuses on students' ability to monitor their learning effectiveness and to adapt their learning approach accordingly, depending on the learning context, thereby enhancing their learning skills.

Bandura (2001) reported that much learner behaviour is self-regulated, primarily learned through observation and by comparing one's behaviour to established performance guidelines or standards. Thus, if one's behaviour meets or exceeds one's performance standards, it is evaluated positively; if it falls short of one's standards, it is evaluated negatively. Likewise, perceived self-efficacy develops from one's direct and vicarious experiences with success and failure" (as cited in Olson & Hergenhan, 2009, p. 354).

Like self-regulated learning, heutagogy incorporates elements of self-actualization, self-efficacy, self-monitoring and observation, self-assessment, self-instruction, and self-evaluation. Self-determined learning differs from self-regulated learning, in that: 1) instructors play a more passive role in the former in directing the learning process; and 2) modelling and external reinforcement (e.g., of instructor, other learners) is not a core characteristic of heutagogy (Zimmermann & Schunk, 2001).

Heutagogy and Emerging Net-Aware Pedagogies

Emerging educational theories such as complexity (Kauffmann, 1995), connectivism (Siemens, 2004) and rhizomatic learning (Cormier, 2008) also share elements of a heutagogic approach. These pedagogies are referred to by Anderson (2010) as net-aware pedagogies that take advantage of the affordances of online environments.

Complexity

Kauffmann (1995) describes complexity as non-accidental and results in an inability to predict an outcome, but it still possible to understand a complex system and how it behaves or self-organizes. Phelps & Hase (2007) define complexity theory as, "a formal attempt to question how coherent and purposive wholes emerge from the interactions of simple, and sometimes non-purposive components" and that it involves considering the whole system, as well as the organisms that form the system and how they interact (p. 507). Organisms within a system are independent of each other but at the same time interdependent, adapting and modifying accordingly, allowing, "effective behaviour to emerge and evolve, and ineffective ideas to be extinguished" (Anderson, 2010, p. 39).

Like complexity theory, learning within heutagogic environments can be unpredictable and chaotic. The role of the learner is to identify and pursue learning goals, and the role of the instructor is to guide the learner through the chaos that comes from uncertainty and complexity. In both heutagogy and complexity theory, learning is emergent, emphasizing learner autonomy, agency, action, self-organization, reflection, and experimentation (Hase & Kenyon, 2007; Phelps & Hase, 2007).

Connectivism

Connectivism is another net-aware theory of online learning (Anderson, 2010), developed by Siemens (2004) and Downes, who believe that learning occurs from creating environments, such as mass open online courses (MOOCs), in which connections can be made to form communities of knowledge.
Within connectivist environments, learning is viewed as a process of finding meaning in the learning process and creating connections across the network (Siemens, 2004). Similar to heutagogy, connectivism is heavily based in complexity theory and places a special emphasis on capacity rather than competency, and the ability of learners to self-organize, understand how they learn, and the agency to choose what is learned (Dron & Anderson, 2014; Siemens, 2004).

Rhizomatic Learning

Deleuze & Guattari (1987) first described the rhizome as a, "subterranean stem…different from roots and radicles. Bulbs and tubers are rhizomes…The rhizome itself assumes very diverse forms, from ramified surface extension in all directions to concretion into bulbs and tubers." (p. 7). Characteristics of the rhizome include: multiple and diverse connections without patterns (interconnected lines); the ability to multiplicate across dimensions and systems and without structure; capable of breaking, reforming, and adapting according to circumstances; and creating an open, tangled map of connections and plateaus without boundaries (Deleuze & Guattari, 1987). Cormier (2008) describes learning as an organic process of negotiation across the map of the rhizome, where, "the canon is fluid and knowledge is a moving target…the community is the curriculum" (paras. 6 and 16). He finds the rhizome to be an applicable

metaphor for a time of rapidly changing knowledge and technology, where user-generated content and social learning make it difficult, if not impossible, to interject the traditional use of the expert model for verifying and legitimizing knowledge (Cormier, 2008).

Similar to heutagogy, rhizomatic learning is non-linear, with the student autonomously defining the learning path and attempting to acquire knowledge within chaos, while partly guided by the instructor. Application of rhizomatic learning to cMOOCs has also been researched, but with mixed outcomes, as learners must demonstrate a high level of autonomous, almost nomadic, behaviour; the necessity of reconsidering the distribution of power (for students, instructors, and administration) within the learning space can also be problematic in rhizomatic learning environments – characteristics also shared with heutagogy (Mackness, Bell, & Funes, 2016).

Heutagogy and Learning Ecologies

Heutagogy shares many principles, such as learner agency and the affordances characteristic of digital technology, with the notion of learning ecologies. Jackson (2013) defines learning ecologies as:

> An individual's learning ecology comprises their process and set of contexts and interactions that provides them with opportunities and resources for learning, development and achievement. Each context comprises a unique configuration of purposes, activities, material resources, relationships and the interactions and mediated learning that emerge from them. (Jackson, 2013, p. 2)

According to Siemens (2007, as cited in Jackson, 2013, pp. 2-3), learning ecologies are adaptive, dynamic, and responsive; chaotic; self-organizing and individually directed; alive; diverse; structured informally; emerging. These characteristics align well with the heutagogic principles of learner agency, self-efficacy and capability, self-reflection and metacognition, and non-linear learning environments. In particular, a heutagogic approach fits well with Jackson's (2013) scenario of independent self-directed learning ecologies, "where people create their own learning ecologies for their own purposes typically for their own learning projects in work or other self-generated contexts" (p. 13). Within this scenario, learners determine the learning path by defining "goals, contexts, content, process, resources and relationships" (Jackson, 2013, p. 13).

In addition to its application in formal educational settings (see Blaschke, Kenyon & Hase, 2014; Hase & Kenyon, 2013; Hase, 2016), heutagogy is also concerned with lifelong learning (Blaschke, 2012), which is increasingly in the hands of learners to control, given their ability to independently access information and develop competencies.

The Pedagogy-Andragogy-Heutagogy (PAH) Continuum

As mentioned previously, heutagogy can be viewed as an extension or continuum of andragogy, or self-directed learning (Hase & Kenyon, 2000). In expanding on this idea, Blaschke (2012) described the shift from andragogy to heutagogy according to the central principles of heutagogy, as shown in Table 1 below.

Table 1: Heutagogy as an extension of andragogy (Blaschke, 2012)

Andragogy (Self-directed)		Heutagogy (Self-determined)
Single-loop learning	vs	Double-loop learning
Competency development	vs	Capability development
Linear design and learning approach	vs	Non-linear (dynamic) design and learning approach
Instructor-learner directed	vs	Learner directed
Getting students to learn (content)	vs	Getting students to understand how they learn (process)

The main feature of this concept is that there is a move towards learner agency. Tay and Hase (2004) added a pedagogical element, where they noticed that cohorts of students undertaking a doctoral programme were highly teacher-dependent early in the programme and then gradually became more learner-centred (increased agency) over time. Initially, being new to social science research but highly experienced engineers, the group was very dependent on the teacher for guidance and leadership (pedagogy). As the programme progressed, students began to shift toward self-directed learning (andragogy), in which they began to provide their context to the research approach and were less dependent on the teacher. Finally, the emergent teacher role became one of guide as the students became more learner directed. Eberle and Childress (2009) also discussed this continuum of learning but referred to it as a movement from traditional classroom environments ("chalk-and-talk") to more self-directed, and finally self-determined, learning. The pedagogy-andragogy-heutagogy continuum (PAH) suggests different levels of learner agency in relation to a learning experience. An increase in learner agency, as described in the PAH continuum, is consistent with a learning ecology in which the learner develops more control over using the affordances provided by modern technology and increased access to information and its sharing.

Luckin et al (2011), however, first coined the term *PAH continuum*, in relation to learner generated contexts (LGC) and the use of technology in learning. Accordingly,

> LGC is about trying to find a framework that might support the more effective use of technology to support learning. It is about opening up the process through which knowledge is constructed and understanding is gained. (Luckin et al, 2011, p. 72)

Technological advances have increased access to and sharing of information to the degree that learners can now play a more autonomous role in their individual learning than in the past, thus changing the teacher-learner relationship. Further, in an educational context there is an Ecology of Resources that is increasingly learner-centred (Luckin et al, 2011, p 72), an ecology where resources can be organized by teachers, parents, the educational system or the learner.

The PAH continuum was devised as a way of understanding the processes of learning that might increase learner agency as the learner develops new learning skills. Thus, Luckin et al. (2011) define the PAH continuum as one in which learners develop cognitively, metacognitively, and epistemically within the learner context, arguing that learners need to be assisted to manage their own learning. Table 1 describes the differences between the three approaches, based on who is control of the process, the educational sector used, the cognition level required, and the context in which knowledge is produced.

Table 2: PAH Continuum (Luckin et al., 2011, p. 78)

	Pedagogy	Andragogy	Heutagogy
Locus of Control	Teacher	Teacher/Learner	Learner
Education Sector	School	Adult	Research
Cognition Level	Cognition	Meta-Cognition	Epistemic Cognition
Knowledge Production Context	Subject Understanding	Process Negotiation	Context Shaping

Garnett & O'Beirne (2013, p.86) summarise the practical application of the PAH as follows:

> The PAH Continuum represents possible mixed uses of **pedagogy** (understanding the subject matter of learning activities in a way that enables the production of learning resources by the teacher), **andragogy** (supporting the collaborative processes of the learning group, including negotiating the content and sequencing of learning such that communications around shared work amplifies participant understanding of the subject and can lead to group work for formative assessment) and **heutagogy** (enabling the development of original responses to the learning being engaged in by learners, including co-creation, and original ways of presenting work for summative assessment).

Cochrane (2010) applied the PAH continuum in the design of a four-year degree by using mobile technologies to assist learners in taking control of their own learning. Success factors found in Cochrane's research include integration of the technology into assessment, modelling of the use of pedagogical tools, and appropriate mobile technology to support the course pedagogy. Blaschke (2014a) used a number of

practical ways to assist learners to shift from pedagogy to heutagogy, including letting learners choose what to learn and how to learn it, encouraging exploration, having the teacher gradually let go of control to become a "guide on the side" enabling learners to learn from each other, helping learners understand how they learn (metacognition), and providing tools for learners to develop personal learning environments.

The notion of the transition from pedagogy to heutagogy (PAH) as a continuum may be misleading, however. It is likely that it is a dynamic process and depends on where the learner happens to be at any particular moment (Jones, 2016). For example, in her research into applications of self-directed learning in grade school education environments, Canning (2010) developed the following graphic (Figure 1), further expanded upon by Blaschke (2012), to incorporate aspects of learner autonomy and maturity, instructor control, and course structure. This presentation suggests that a learner can move up and down along the continuum depending on their level of sophistication with respect to the discipline or content.
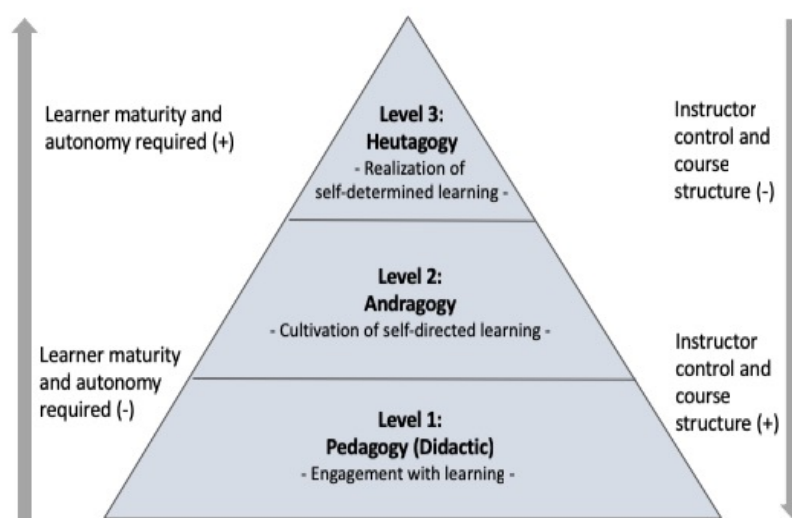

Figure 1. Pedagogy - Andragogy - Heutagogy (PAH) Continuum (Blaschke, 2012, adapted from Canning, 2010)

In support of this concept, Hase (2018, personal communication) writes:

> I might be a very competent psychologist and self-determined in my learning due to my experience and knowledge of my field. But when I choose to take up art for the first time at the age of 50, I might find that, for a while, I am very dependent on teachers before gradually becoming more and more independent in learning how to become an artist. And, I might move between dependency and independency as needs dictate. However, it is important to recognise that I am in control of the learning process with strong learning self-efficacy.

McKeown (2011) and Kanwar et al (2013) have further built upon the PAH continuum, incorporating aspects of learner and role of the learner, as well as teacher and role of the teacher.

The PAH continuum is a useful heuristic model and highly contextual. As described above, a learner may require a pedagogic (didactic) approach to learning, while at other times have the capacity to practice self-determined learning. At any given time, depending on the learner context, the teaching and learning approach must be adapted accordingly. For this reason, it may be helpful to view the continuum in a circular form, with learners and instructors accessing the continuum as is defined by their learning and teaching context.

If teachers understand that learners can transition to higher levels of learning agency, they can design the learning process accordingly. Similarly, learners might need assistance in becoming more learner-managed (Brandt, 2013). Educators can guide learners toward becoming more self-determined by adopting and incorporating many of the learner-centred pedagogies described in the previous section by:

- Designing a learning environment that supports learner autonomy and allows room for failure.
- Working with learners in identifying and formulating learning goals and assessment criteria.
- Incorporating learner-directed questions and problems, and project-based learning activities that draw from the learner's experience.
- Scaffolding the learning process and ensuring that there are opportunities for the learner to experience success.
- Allowing learners to define learning activities and outcomes.
- Practicing empathy through positive, formative, and timely feedback.
- Giving the learner choice, autonomy, and flexibility in making decisions about his/her learning.
- Encouraging learners to monitor their learning path, process, and achievements.
- Promoting ongoing reflection on the learning environment and learning process (what is learned and how it is learned).
- Including learning activities that support learner exploration, content creation, collaboration and networking with others, and sharing of results/findings.

The Role of Digital Media

With the rapid development of technology has come the ability of students to be more actively involved in learning and creation of knowledge and information, and the ability of instructors to more effectively realize the teaching approaches described above. These new digital media are characterized by specific affordances that are capable of supporting, promoting, and developing learner agency and self-determined learning. Digital media affordances are not simply characteristics of the technology but are elements that define how the technology can be used – and the intended and unintended consequences of the technology use (Conole & Dyke, 2004).

Examples of technological affordances attributable to digital media include: the ability to explore and discover information; create and share new knowledge; co-collaborate with others in the creation of new information; connect and network with others on the Internet; and reflect upon knowledge that has been acquired and how this can be incorporated into one's knowledge constructs and existing value systems. According to Cochrane et al. (2014), the use of digital media to support self-determined learning focuses more on, "pedagogies that deal with the process of becoming, rather than pedagogies that focus upon knowledge transfer" (p.13).

Social media in particular provides opportunities for learner agency and active exploration, construction, and distribution of information, and there are many ways in which the media can be used to support a heutagogic or self-determined learning approach (Figure 2).
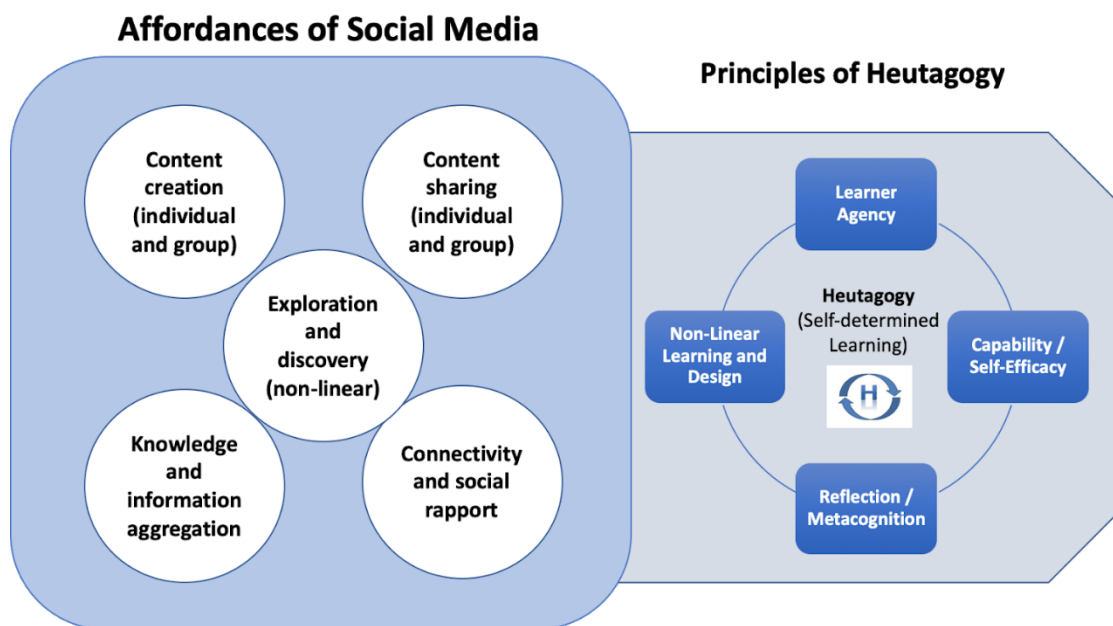
Figure 2: Social media affordances and heutagogic principles

One meaningful classification system for social media is that presented by Kaplan & Haenlein (2010) who categorized social media as collaborative projects, individual showcase projects, content/information sharing communities, virtual game worlds, and virtual social worlds. In combining the Kaplan & Haenlein categorization with Prensky's (2010) noun-verb analogy of skills and social media tools, Blaschke & Brindley (2015) built upon the Kaplan & Haenlein categorization scheme to create a framework that can be used for selecting the appropriate media for building and developing specific skills. Table 3 summarizes this framework according to social media classification, skills to be developed (verbs), and the social media tools for developing the skills (nouns).

Table 3: Skills and social media tools (Prensky, 2010), according to Kaplan and Haenlein's (2010) classification systems, as presented by Blaschke & Brindley (2015)

Classification	Skills (Verbs)	Tools (Nouns)
Collaborative projects	Collaborate; communicate (write, read, discuss, interact); construct knowledge (individual and group); socialize; navigate; negotiate; solve problems; think deeply, critically, and logically; reflect; evaluate	Wikis, Google Docs, brainstorming tools (e.g., mindmaps), mashups, Dropbox, Box.net
Individual showcase projects	Design and create; think critically, deeply, and logically; share knowledge; share experience; give advice; express yourself	Blogs, e-portfolios
Social networking	Communicate (read, write, discuss, interact); collaborate; search; explore; listen; connect; share; think critically; reflect; support others; build community; promote (self); exchange	Twitter, LinkedIn, Facebook, social tagging (e.g., Flickr, Pinterest), Cloudworks
Content/ information sharing communities	Communicate (read, write, discuss, interact); collaborate; search; inquire; compare; combine; think critically; reflect; observe; share; build community; promote (self); distribute	YouTube, Diigo, Twitter, LinkedIn, news aggregators (RSS), Evernote
Virtual game worlds	Connect; collaborate; navigate; play; communicate (read, write, discuss, interact); explore; analyze and solve problems; think critically; compete; program; model; innovate; plan; simulate	Minecraft, alternate reality games (ARGs), massively multiplayer online games (MMO), and global social awareness games
Virtual social worlds	Explore; observe; experiment; discover; model; predict; solve problems; innovate; plan; simulate	Simulations, Second Life

Adapted from Prensky, 2010.

This framework can be useful in designing learning activities in the classroom, as it considers the pedagogical activity and technological affordance (tool) that can be used to support and promote the activity. The framework is also helpful in designing holistic learning activities that consider a careful balancing of not only pedagogical approach (e.g., learning outcome) but also the technological delivery form.

One example of a type of social media that supports the creation of information is the online collaborative project, where students work together to create and develop new knowledge (Blaschke, 2014b). In addition, students can also use the collaborative space to communicate with one another formally or informally, to solve problems, to share results of research, and to critically discuss and evaluate their collaborative work. Examples of social media tools that can be used for this purpose include, GoogleDocs and brainstorming tools such as mindmaps (mindmeister.com, bubbl.us) (see Blaschke, 2014b). Blogs and e-portfolios are examples of individual showcase projects that can be created using social media, helping to build learner skills such as creation and sharing of new ideas and information, critical and deep thinking about topics, and creative expression through the use of the media (see Schuetz, 2014; Blaschke & Brindley, 2010). Social networking sites, such as Twitter and LinkedIn, can be used to connect with other professionals in the field and to build communities of practice (see Price, 2014). Content/information sharing media such as YouTube, Diigo, ScoopIt!, and Twitter can support learners in creating and distributing content and information, as well as in connecting with others (see Blaschke, 2014b). Virtual game worlds encourage students to engage with learning and problem-solving by allowing for exploration and connections with others (see Ching, 2015).

Conclusion

With a momentous improvement in learning affordances as a result of technological advances, there has been a shift towards greater learner agency in formal and informal educational settings. This has provided a challenge to educators as to how they negotiate the learning process with the learner at the centre and as an active agent of learning rather than as a passive recipient of information.

As a theory that places the student at the centre of the learning process, heutagogy can be used as a framework for supporting and promoting learner agency. As such, it draws from and extends many of the long-established pedagogies such as self-efficacy, self-determination, and self-directed (andragogy), and self-regulated learning, while focusing on additional aspects of learner capability, reflection and metacognition, and non-linear learning. The concept of learning ecologies further extends a learner-centred approach by recognizing an environment that provides opportunities for the learner to access information and skills, share information, develop their learning skills and to negotiate their own learning, both with and without a teacher.

The PAH continuum can provide a structured approach for educators in identifying the level of learning agency in their students and for devising learning processes accordingly. More importantly, the educator needs to take note of a learning ecology that provides open access to learning resources and an increasing learner-control as a result. Through their many learning affordances, digital tools in the form of social media further extend the opportunities for designing learner-centred spaces by promoting the ability of students to explore, create, collaborate, connect, reflect, and share knowledge within online environments. A key role of the educator is to increase the skills of learners in managing their own learning, in terms of content and learning spaces, so that their learning agency is increased.

Statement on open data, ethics and conflict of interest

As research was not conducted for this article, approval was not required from an institutional ethics committee. There is no potential conflict of interest in publishing the work presented here.

References

Anderson, T. (2010). Theories for learning with emerging technologies. In G. Veletsianos (Ed.), *Emerging technologies in distance education* (pp. 23-39). Edmonton, Canada: Athabasca University Press. http://dx.doi.10.15215/aupress/9781771991490.01.

Bandura, A. (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review,* 84(2), 191-215. http://dx.doi.org/10.1037/0033-295X.84.2.191.

Bandura, A. (2001). Social cognitive theory: An agentic perspective. *Annual Review of Psychology,* 52, 1-26. https://doi.org/10.1146/annurev.psych.52.1.1.

Blakemore, Sarah-Jayne and Uta Frith (2005). *The learning brain: Lessons for education,* Blackwell: Maiden.

Blaschke, L.M. (2012). Heutagogy and lifelong learning: A review of heutagogical practice and self-determined learning. *The International Review of Research in Open and Distributed Learning,* 13(1), 56-71. http://doi.irrodl.org/index.php/irrodl/article/view/1076/2087.

Blaschke, L.M. (2014a). Moving students forward in the PAH continuum: Maximizing the power of the social web. In L.M. Blaschke, C. Kenyon, & S. Hase (Eds.), *Experiences in self-determined learning.* Center for Open Education Research (COER), University of Oldenburg: Oldenburg, Germany. https://uol.de/fileadmin/user_upload/coer/Experiences-in-self-determined-learning.pdf.

Blaschke, L. M. (2014b). Using social media to engage and develop online learners in self-determined learning. *Research in Learning Technology,* 22. https://doi.org/10.3402/rlt.v22.21635

Blaschke, L.M. (2016). *Strategies for implementing self-determined learning (heutagogy) within education: A comparison of three institutions (Australia, South Africa, and Israel).* (Unpublished master's thesis). Carl von Ossietzky Universität Oldenburg, Oldenburg, Germany.

Blaschke, L., & Brindley, J. (2011). Establishing a foundation for reflective practice: A case study of learning journal use. *European Journal of Open, Distance, and E-Learning,* 2. http://www.eurodl.org/materials/special/2011/Blaschke_Brindley.pdf.

Blaschke, L.M. & Brindley, J. (2015). Using social media in the online classroom. In M. Ally & B. Khan (Eds.), *The international handbook of e-learning (Volume 2): Implementation and case studies* (pp. 11-20). Athabasca, Canada: Routledge.

Blaschke, L.M., & Hase, S. (2015). Heutagogy: A holistic framework for creating 21st century self-determined learners. In M.M. Kinshuk & B. Gros (Eds.), *The future of ubiquitous learning: Learning designs for emerging pedagogies* (pp. 25-40). Heidelberg, Germany: Springer Verlag.

Blaschke, L.M., Kenyon, C., & Hase, S. (2014). *Experiences in self-determined learning.* Center for Open Education Research (COER), University of Oldenburg: Oldenburg, Germany. https://uol.de/fileadmin/user_upload/coer/Experiences-in-self-determined-learning.pdf.

Brandt, B.A. (2013). The learner's perspective. In S. Hase, & C. Kenyon (Eds.), *Self-determined learning: Heutagogy in action* (pp. 99-116). London, UK: Bloomsbury Academic.

Canning, N. (2010). Playing with heutagogy: Exploring strategies to empower mature learners in higher education. *Journal of Further and Higher Education, 34*(1), 59-71. https://doi.org/10.1080/03098770903477102

Ching, J.M.R. (2015). CSI Agent on a Mission Game App. *QS Stars Wharton Reimagine Education Conference and Awards Ceremony*, December 7-8. Research Collection School of Economics. https://ink.library.smu.edu.sg/soe_research/2200/

Cochrane, T. (2010). Exploring Mobile Learning success factors. *Research in Learning Technology (ALT-J), 18*(2), 133-148. https://journal.alt.ac.uk/index.php/rlt/article/view/882.

Cochrane, T., & Narayan, V. (2014). Cultivating creative approaches to learning. In L.M. Blaschke, C. Kenyon, & S. Hase (Eds.), *Experiences in self-determined learning* (pp. 149-169). Center for Open Education Research (COER), University of Oldenburg: Oldenburg, Germany. https://uol.de/fileadmin/user_upload/coer/Experiences-in-self-determined-learning.pdf.

Cochrane, T., Antonczak, L., Guinibert, M., & Mulrennan, D. (2014). Developing a mobile social media framework for creative pedagogies. *10th International Conference on Mobile Learning*, Madrid, Spain. https://files.eric.ed.gov/fulltext/ED557241.pdf.

Conole, G. & Dyke, M. (2004). Understanding and using technological affordances: a response to Boyle and Cook. *Research in Learning Technology (ALT-J), 12*(3), 301-308. https://doi.org/10.1080/0968776042000259609.

Cormier, D. (2008). Rhizomatic education: Community as curriculum. *Innovate 4*(5). https://nsuworks.nova.edu/innovate/vol4/iss5/2.

Deci, E.L., Eghrari, H., Patrick, B.C., & Leone, D.R. (1994). Facilitating internalization: The self-determination theory perspective. *Journal of Personality, 62*(1), 119-42. https://www.ncbi.nlm.nih.gov/pubmed/8169757

Deci, E.L., & Ryan, R.M. (2002). *The handbook of self-determination research.* Rochester, NY: The University of Rochester Press.

Pacific Journal of Technology Enhanced Learning, 2019, 1(1).

Deleuze, G., & Guattari, F. (1987). *A thousand plateaus: Capitalism and schizophrenia.* London, UK: University of Minnesota Press.

Dron, J., & Anderson, T. (2014). *Teaching crowds: Learning and social media.* Edmonton, Canada: AU Press, Athabasca University. http://www.aupress.ca/index.php/books/120235.

Eberle, J., & Childress, M. (2009). Using heutagogy to address the needs of online learners. In P. Rogers, G.A. Berg, J.V. Boettcher, & L. Justice (Eds.), *Encyclopedia of distance learning* (2nd ed.), (pp. 2239-2245). New York, NY: Idea Group, Inc.

Garnett, F. (2013). The PAH continuum: Pedagogy, andragogy, and heutagogy. (Web log message). *Heutagogy Community of Practice.* https://heutagogycop.wordpress.com/2013/03/04/the-pah-continuum-pedagogy-andragogy-heutagogy/.

Garnett, F. & O'Beirne, R. (2014). Putting heutagogy into learning. In S. Hase, & C. Kenyon, (2013), *Self-determined learning: Heutagogy in action* (pp. 131-143). London: Bloomsbury.

Gazzaniga, M.S., Ivry, R.B., & Mangun, G. R. (2019). Cognitive neuroscience: the biology of the mind, Norton & Company, New York.

Gerstein, J. (2013). Education 3.0 and the pedagogy (andragogy, heutagogy) of mobile learning. (Web log message). *User generated education.* http://usergeneratededucation.wordpress.com/2013/05/13/education-3-0-and-the-pedagogy-andragogy-heutagogy-of-mobile-learning/

Harasim, L. (2011). *Learning theory and online technologies.* New York, NY, & London, UK: Routledge.

Hase, S. (2014). An introduction to self-determined learning. In L.M. Blaschke, C. Kenyon, & S. Hase (Eds.), *Experiences in self-determined learning.* Center for Open Education Research (COER), University of Oldenburg: Oldenburg, Germany. https://uol.de/fileadmin/user_upload/coer/Experiences-in-self-determined-learning.pdf.

Hase, S. (2016). Self-determined learning (heutagogy): Where have we come since 2000? *Southern Institute of Technology Journal of Applied Research, Special Edition.* https://www.sit.ac.nz/Portals/0/upload/documents/sitjar/Heutagogy%20-%20One.pdf.

Hase, S., & Kenyon, C. (2013). *Self-determined learning: Heutagogy in action.* London, UK: Bloomsbury Academic.

Hase, S., & Kenyon, C. (2007). Heutagogy: A child of complexity theory. *Complicity: An International Journal of Complexity and Education, 4*(1), 111-119. https://journals.library.ualberta.ca/complicity/index.php/complicity/article/view/8766/7086.

Hase, S., & Kenyon, C. (2000). From andragogy to heutagogy. *UltiBase Articles.* Retrieved from https://epubs.scu.edu.au/gcm_pubs/99/.

Jaakkola, M. (2015). Teacher heutagogy in the network society: A framework for critical reflection. In P. Jandric, & D. Boras (Eds.), *Critical learning in digital networks* (pp. 163-178). Switzerland: Springer International Publishing.

Jackson, N.J. (2013). The concept of learning ecologies. *Lifewide learning, education, and personal development* (e-book). http://www.lifewideebook.co.uk/uploads/1/0/8/4/10842717/chapter_a5.pdf.

Jones, C. (2016). Enterprise education: towards the development of the heutagogical learner. *The All Ireland Journal of Teaching and Learning in Higher Education, 8*(1), 2542–25417. http://ojs.aishe.org/index.php/aishe-j/article/view/254

Jonassen, D., Davidson, M., Collins, M., Campbell, J., & Bannan Haag, B. (1995). Constructivism and computer-mediated communication in distance education. *The American Journal of Distance Education, 9*(2), 7-26. https://doi.org/10.1080/08923649509526885

Kanwar, A.S., Balasubramanian, K., & Umar, A. (2013). Lifelong learning in South Africa. *International Journal of Continuing Education & Lifelong Learning, 5*(2), 17-39. https://search.informit.com.au/documentSummary;dn=385667795117099;res=IELHSS.

Kaplan, A. M., & Haenlein, M. (2010). Users of the world unite! The challenges and opportunities of social media. *Business Horizons, 53*, 59–68. http://doi:10.1016/j.bushor.2009.09.003.

Kauffmann, S. (1995). *At home in the universe: The search for laws of complexity.* London, UK: Penguin.

Knowles, M. (1975). *Self-directed learning: A guide for learners and teachers.* USA: Cambridge Adult Education.

Knowles, M. S., Swanson, M. A., & Holton, E. F. (2011). *The adult learner: The definitive classic in adult education and human resource development* (7th ed.). UK: Taylor & Francis.

Mackness, J., Bell, F., & Funes, M. (2016). The rhizome: A problematic metaphor for teaching and learning in a MOOC. *Australasian Journal of Educational Technology, 32*(1), 78-91. http://doi:10.14742/ajet.2486.

Pacific Journal of Technology Enhanced Learning, 2019, 1(1).

Luckin, R., Clark, W., Garnett, F., Whitworth, A., Akass, J. & Cook, J. (2010). Learner-generated contexts: A framework to support the effective use of technology for learning. In M. Lee & C. McLoughlin (Eds.), *Web 2.0-based e-learning: Applying social informatics for tertiary teaching* (pp. 70-84). Hershey, PA: IGI Global.

Maslow, A.H. (1943). A theory of human motivation. *Psychological Review, 50*, 370-396.

Mckeown, L. (2011). Pedagogy-Andragogy-Heutagogy. (Web log. http://www.blog.lindymckeown.com/?p=52

Olson, M.H., & Hergenhahn, B.R. (2009). *An introduction to theories of learning* (8th ed.). New Jersey: Pearson Prentice Hall.

Phelps, R., & Hase, S. (2007). Complexity and action research: Exploring the theoretical and methodological connections. *Educational Action Research, 10*(3), 507-524. https://doi.org/10.1080/09650790200200198.

Price, D. (2014). Heutagogy and social communities of practice: Will self-determined learning re-write the script for educators? In L.M. Blaschke, C. Kenyon, & S. Hase (Eds.), *Experiences in self-determined learning*. Center for Open Education Research (COER), University of Oldenburg: Oldenburg, Germany. https://uol.de/fileadmin/user_upload/coer/Experiences-in-self-determined-learning.pdf.

Prensky, M. (2010). *Teaching digital natives: Partnering for real learning*. Thousand Oaks, CA: Corwin Press.

Rogers, C.R. (1961). *On becoming a person: A therapist's view of psychotherapy*. Boston, MA, & New York, NY: Houghton Mifflin Company.

Schuetz, R. (2014). Creating learning legacies using blogs. In L.M. Blaschke, C. Kenyon, & S. Hase (Eds.), Experiences in self-determined learning. Center for Open Education Research (COER), University of Oldenburg: Oldenburg, Germany. https://uol.de/fileadmin/user_upload/coer/Experiences-in-self-determined-learning.pdf

Siemens, G. (2004). Connectivism: A learning theory for the digital age. (Web log message). *Elearnspace*. http://www.elearnspace.org/Articles/connectivism.htm.

Stephenson, J. & Weil, S. (1992), *Quality in learning: A capability approach in higher education*. London, UK: Kogan Pa

Swan, K. (2010). Teaching and learning in post-industrial distance education. In M. F. Cleveland-Innes & D. R. Garrison (Eds.), *An introduction to distance education: Understanding teaching and learning in a new era* (pp. 113-114). New York, NY, & London, UK: Routledge.

Tay, B.H. & Hase, S. (2004). The role of action research in workplace PhDs. *Action Learning and Action Research Journal, 9*(1), 81–92.

Tokuhama-Espinosa, T. (2011). Mind, brain and. Education science: a comprehensive guide to the new brain-based teaching, New York: W. W. Norton

Zimmerman, B.J., & Schunk, D.H. (2001). *Self-regulated learning and academic achievement: Theoretical perspectives* (2nd ed.). New York, NY, & London, UK: Routledge.