

## **Adult learners' needs in online and blended learning**

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*Identifying and fulfilling adult learners' needs is critical to instructional designs aimed at enhancing their achievement and self-empowerment. In reviewing different theories and perspectives on adult learning and online and blended learning (OBL), it is noteworthy that there is not a comprehensive framework to guide the design of OBL environments that meet adult learners' needs, and that are underpinned by adult learning theories, online knowledge construction, motivational theories, and technological acceptance models. In this respect, the theory of existence, relatedness, and growth (ERG) (Alderfer, 1972) is applicable to interpret different types of needs to sustain learning motivation. Employing the ERG theory as the overarching framework, the purpose of this paper is to capture adult*

*learners' needs from both positivist and subjectivist perspectives. In other words, the identified needs are to help adult learners optimally perform the learning activities designed to achieve the learning goals on the one hand, and to sustain their motivation during the learning process on the other hand. Thus, the framework is helpful for practitioners, curriculum developers, and researchers who are in search of a theoretical background for both instructional design and empirical investigation.*

**Keywords:** *online/blended learning, adult learners, learning needs*

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## **Introduction**

The conceptualisation and evaluation of adult learners' needs are crucial in designing learning environments (Isman, 2011). Fulfilling the needs of adult learners is more likely to bring about high-quality learning. While traditional learning environments have been gradually transformed into those of a technology-mediated nature, instructional designers and instructors of online and blended learning (OBL) are lacking a conceptual framework that underlines the needs of adult learners. In addressing the challenges adult educators encounter when it comes to teaching and learning in an OBL environment, Shea (2006) provides a pertinent account. The author postulates that efforts should be devoted to understanding 'how learning generally occurs; how it occurs among adult learners, and how it occurs in technology-mediated environments' (Shea, 2006, p. 20). Laurillard (2012) believes that learning theories have not changed to a great extent with the introduction of technologies. Different perspectives and theories such as experiential learning, inquiry learning, socio-constructivism, and more recently transformative learning still reserve a major role in explaining how learners acquire knowledge in formal settings (Laurillard, 2012). However, a significant contribution that technologies have made in the field of instructional design is that they have leveraged students' learning to a markedly higher cognitive level than traditional forms of teaching (McLoughlin, & Lee, 2008). Emerging technologies and learning platforms have allowed students access to learning resources in various formats, interactive tools for collaborative works, web-based activities, and scaffolding tools for information searches, self-

assessment, monitoring, receiving feedback and progress tracking (Laurillard, 2012). These functionalities offered by technology-mediated learning environments have changed the nature of students' learning, empowering them to be more self-directed learners. Such changes do not occur naturally, notwithstanding. Thus, a conceptual framework to understand adult learners' needs in an OBL environment is of significance. This is because instructional designers and instructors should know what they need from technologies before they can effectively use them for educational purposes. Otherwise, the teaching is more likely to risk being technologically driven, but not pedagogically driven (Laurillard, 2012).

Against this background, this paper reviews relevant theoretical and empirical research on adult learners' needs and proposes a model to conceptualise adult learners' needs, employing the existence, growth, and relatedness theory (ERG) (Alderfer, 1972) as the overarching framework. More specifically, we examine how adult learners' needs are defined from different perspectives, critically appraise existing frameworks and research on adult learners' needs, and synthesise these perspectives into one comprehensive framework guided by ERG theory (Alderfer, 1972).

## **Adult learners needs: definition and literature review**

### ***Learner needs: conceptualisation***

The concept of learners' needs and learning are most prominent in adult education (Wiltshire, 1973). Boone, Safrit, and Jones (2002, cited in Ayers, 2011) mention that the failure of programs to address adult learners' immediate interests results in a lack of motivation. According to Ayers (2011), adult scholars expose certain concerns regarding adult learners' ability to adequately justify their learning needs. For example, adult learners may express 'trivial wants' rather than genuine needs (Archembault, 1957, cited in Ayers, 2011). By continually responding to adult learners' expressed needs, Ayers (2011, p. 3) cautions that instructional designers and instructors are acting with a 'customer service mentality'. Previously, Brookfield (1986) also shares this standpoint and warns that instructional designers may prevent adult learners from achieving essential learning goals if the program is so contingent on adult learners' specific needs. Ayers (2011)

argues that by maintaining that adult learners' needs should be filtered through the instructors' philosophical lens, Knowles (1984) has raised certain ambiguities concerning the role of instructional designers and instructors in defining learning needs.

Pearce (1995) proposes two major philosophical beliefs influencing educators' decision-making in curriculum development: positivist orientation (functional) and subjectivist orientation (empowerment). The positivist approach based on scientific empiricism translates learners' needs into assessable objectives and maintains that the goal of education is to help people to solve problems (Pearce, 1995). Thus, there is a distinction between genuine educational needs and learners' wants or desires (Pearce, 1995). A critique of empiricism is that educators are more likely to prescribe the learning needs, neglecting the centrality of learners' expressed needs (Pearce, 1995). Inversely, the subjectivist approach places emphasis on the empowering function of education; that is, to enable one to critically challenge the various powers and systems that affect their lives. Thus, practitioners following this paradigm consider needs as being socially constructed and think that all needs are real whether 'they are classified as needs, interests, wants, or desire' (Pearce, 1995, p. 409).

Knightley (2007) and Laurillard (2012) posit that learners enter formal education bringing with them emotional and intellectual characteristics as well as a mix of conceptions, skills, and motivation from prior learning experiences. Yet, these characteristics and conceptions are subject to change as learners participate in a learning environment designed to foster collaboration, critical thinking, independent learning, application of knowledge in real-life settings, reflection, and self-regulation (Laurillard, 2012). Laurillard (2012) argues that the role of formal learning is to help students acquire academic knowledge by effective pedagogy. This means that while capitalising on learners' prior learning experiences, it supports learners to move beyond their preferred learning styles and approaches. Thus, the consideration of learners' expressed needs, which should be aligned with instructional goals, is advocated (Laurillard, 2012). Put another way, Laurillard (2012) suggests that both subjectivist and positivist perspectives should be taken into account when defining adult learners' needs. Following this point of view, in this paper, we define adult learners' needs as those that motivate the learners and substantially enhance their learning,

the lack of which will lead to demotivation and failure to achieve major learning and personal goals. Thus, learning need identification is a subjective process and can be subject to change over time (Thampy, 2013), as well as being dependent on learners' characteristics. However, these needs should be carefully examined such that individual differences will not be sacrificed for the acquisition of required knowledge and skills as specified by the curriculum. In this sense, a positivist approach should come into effect.

### ***A review of existing frameworks of learner needs in OBL design***

Although researchers are still searching for a common framework and overarching theory of adult learning, they tend to agree on three marked points.

First, that knowledge should be socially constructed to yield more quality learning is a common discourse. Therefore, interactions with peers play an important role in the knowledge construction process. In this respect, the Community of Inquiry (CoI) (Garrison, Anderson, & Archer, 2000) is a prominent framework. Based on socio-constructivism, the model proposes that the process of constructing knowledge is collaborative and requires active participation on the part of the learners (cognitive presence) and meaningful learning activities design and facilitation from the instructors (teaching presence). Furthermore, an environment that fosters a sense of respect, support, and trust (social presence) should be strived for to help the learners feel connected to each other, which results in more comfort when sharing opinions. While the CoI is useful in guiding the design and facilitation of online learning activities, other principles of effective online pedagogy based on learning theories, motivation, and assessment should be integrated. Another related learning paradigm concerning online knowledge construction pioneered by Siemens (2005) is connectivism. Siemens views learning as a process of accumulating legitimate knowledge from a diverse blend of perspectives through 'social interaction, connection, and collaboration' (McLoughlin & Lee, 2008, p. 14). Nevertheless, according to Ryberg, Buus, and Georgsen (2012, p. 55), connectivism is more ascribed to learning in a 'complex variably tied and scaled networks' rather than a strongly tied community of mutually dependent learners following a course within a specific timeframe. Thus, connectivism mainly addresses how individuals build up knowledge

in a networked environment as a personal pursuit and fails to tackle issues of 'power, voice, access, and inclusion' (Hodgson, McConnell, & Dirckinck-Holmfeld, 2016, p. 293). Connectivism is closely connected with networked learning theory, which Harasim, Hiltz, Teles, and Turoff (1995) propose as the new learning paradigm given the advancement of educational technologies. Emphasising that learners should be involved in collaborative dialogues, and maintaining that knowledge emerges rather than being prescribed through the negotiations between learners in the networks, distinguishes networked learning from connectivism (Nielsen, & Danielsen, 2012). On the part of the learners, Hodgson et al. (2012) suggest that self-determination during the learning process and striving to establish an identity while collaboratively constructing knowledge with peers are important. Thus, in order to be actively engaged, learners are expected to either demonstrate or be supported to develop a number of skills such as digital and critical literacies (Downes, 2014; Littlejohn, Beetham, & McGill, 2012). Yet, with a strong focus on how learning takes place in technology-supported environments by collaboration and reflective dialogues, connectivism and networked learning theorists have not clearly specified how learners' motivational processes can be supported (Hall, 2008). The idea that individuals should participate in the discourses of a learning community in order to construct knowledge is similar to what Lave and Wenger (1991) term as communities of practice. The contribution of networked learning theory is the epistemic belief concerning the concept of self-constructed and emerged knowledge, which responds to the three types of affordances provided by the web: communications, information abundance, and net-based agents (e.g. search engines) (Anderson, & Whitelock, 2004). However, the two learning theories fail to address the role of the learning environment, of which the instructors' facilitation, and the cognitive and affective contribution from the online communities are exemplary. In this respect, it is worthwhile to refer to Bandura's (1986) social cognitive theory. Social cognitive theory maintains that individuals' learning or behaviours can be affected by their cognitive perceptions when interacting with the environment. For example, the feedback that learners receive from the instructors or peers, or the observation that others have been successful in a learning task can make them feel more efficacious, and subsequently modify their learning strategies to attain the expected learning outcomes. Therefore, to be useful as a theoretical lens for instructional design, cognitive and

motivational processes that have been addressed in earlier works such as socio-constructivism (Vygotsky, 1978) and social cognitive theory (Bandura, 1986) should be taken into account. OBL instructional designers can take a different perspective when one learning theory does not suffice. This perspective should necessarily take adult learners' needs as a starting point, and consequently, strategies to advance these needs should have theoretical underpinnings.

Second, while adults are portrayed as self-directed learners, coherent and clear presentation of the course goals, structures, and subject matter content is of crucial importance because this results in a feeling of safety (Milheim, 2012; Philips, Baltzer, Filoon, & Whitley, 2017). Any confusion regarding the expectations and deadlines of certain course works will affect the self-directed learning of adults. In this respect, Ryberg et al. (2012) postulates that the pedagogical values drawn from behaviourism, which necessitates carefully planned intended outcomes linked to instructional strategies, are still relevant. While factors related to course organisation and structures may influence adult learners' self-directed learning, there are others related to motivating and scaffolding strategies on the part of the instructors that have not been covered in behaviourism. This specifies the inclusion of both motivation theories and learning theories; for example, constructivism (Bruner, 1986) to adequately support the self-directed learning of adults.

Third, a large body of research (Jarvis, 2007; Mezirow, 2000; Ross-Gordon, 2003) supports that the learning of adults should be different from that of high school students. Most adult learners return to school after a certain time, carrying with them rich resources of experiences and perspectives that are well established. This is one of the critical factors differentiating adults from high school students or traditional learners at college who may not have had the opportunities to accumulate or be exposed to professional resources. Therefore, the learning of adults should be transformative (Mezirow, 2000; Taylor, 2008); that is, to internalise new knowledge and theories: adults' prior experiences and former perspectives should serve as the 'frame of references' to investigate the legitimacy of the newly introduced theories/knowledge. Thus, providing learners with opportunities to exercise reflection; that is, 'activity in which people recapture their experience, think about it, mull it over and evaluate it' (Boud, Keogh, & Walker, 1985, p. 33) by offering ill-structured problems to solve or

exposing learners to varied perspectives is highly recommended. In OBL, these opportunities can manifest in the assignments given, but this is not sufficient. For reflection to occur, instructors' facilitation of these reflective discourses is crucial. Put another way, adult learners have a substantial need of instructors' support for reflective learning or transformative learning to be realised, which is viewed as the highest level of reflective learning (Moon, 1999).

### ***The construction of a conceptual framework of adult learners' needs in OBL***

An overview of the major frameworks guiding OBL instructional design shows that one framework does not suffice for a reflection of pedagogical practices intended to meet adult learners' needs. Each framework has its own strengths. For example, the CoI (Garrison et al., 2000) should be the first to mention for facilitating constructive online discourses. Meanwhile, researchers (Asoodar, Vaezi, & Izanloo, 2016; Venkatesh, Thong, & Xu, 2012) have increasingly pointed to prominent features of the learning management systems (LMSs); for example, perceived ease of use, perceived usefulness, and course flexibility, as prerequisites for enhancing the learning experience and learners' satisfaction. Thus, it will be a limitation not to include aspects of the technologies employed during the learning process as one of the primary needs of the adult learners' needs framework. This is because learners may have different levels of computer and Internet self-efficacy (Chu, 2010). This means that the need for technical support to sufficiently perform their learning in the online platform should also be addressed. Furthermore, it is believed that other aspects of individual differences, motivation, and assessment should bear equal importance in instructional design; that is, a synthesis of different learning, motivation, and technological acceptance theories should be examined together. In doing so, we can adequately resolve aspects of access and inclusion raised by Hodgson et al. (2016). Therefore, it is suggested that instead of asking 'How to best design an OBL learning environment?', we should alternatively address the question of 'What do adult learners need in order to better perform in an OBL environment?' to guide the OBL instructional design.

Following the conceptualisation of adult learners' need, it is important to identify the different types of motivation that adult learners bring with them when enrolling in a certain course or program. Additionally, we should understand the barriers or difficulties that prevent them from



achieving both their academic and personal goals. In doing so, a more in-depth understanding of adult learners' needs and input to address these needs in an OBL environment can be unravelled.

From a motivational perspective, Knowles (1984) suggests that adult learners are more motivated to learn if the content is relevant to their goals and has an immediacy of application. Due to their maturity, adult learners are characterised as being autonomous and self-directed learners who prefer to make decisions for their own learning. Concerning this, Knowles' two regarding adult learners' preference for relevance to life-situations and autonomy fit nicely with principles of constructivism (Huang, 2002) and self-determination theory (Ryan, & Deci, 2000). The former emphasises that instructional design should create a relevant learning environment to support the learners' knowledge construction process whereas the latter entails a necessity to enable learners to take ownership of their learning.

As to the self-directedness, some researchers (Cercone, 2008), do not share Knowles' assumption that all adult learners are self-directed. Day, Lovato, Tull, and Ross-Gordon (2011) also find that adult learners should be provided with structure to comfortably and effectively organise their learning. Research has shown that self-directedness is recognised as a skill that should be practiced and fostered by instructional design with the instructors' direct guidance fading over time (Alotaibi, 2016; Grow, 1991). More specifically, Alotaibi (2016) suggests that clear goals and assessment standards as well as appropriate strategies to foster learners' independence over time should be incorporated in the instructional design. Thus, adult learners are not self-directed per se, but they need to be provided with conditions to exercise this important skill to be academically successful. Instructional design can support this goal by emphasising learners' need for structure; for example, knowing how the course is organised, and of process support. The latter is analogous to the need for competence from self-determination theory (Ryan, & Deci, 2000), wherein the learners need to be supported to perceive a feeling of efficacy to trigger their intrinsic motivation. In an OBL setting, this process support is realised in terms of individual learner support by means of the instructor's feedback and scaffolding, and by interacting and working collaboratively with other learners, harnessed by interactive technologies.

Regarding the process of online interaction with peers for purposes of (co) construction of knowledge, the affordances of technologies, the facilitation from the instructors as shown by the CoI framework, the perceived sense of belonging and norms of reciprocity (Diep, Cocquyt, Zhu, & Vanwing, 2016) all have a role to play. As for the affordances of technologies, researchers like Parchoma (2014) calls for a need to conceptualise the concept. While Laurillard (2012) recommends that pedagogy should specify how technologies would be used, Dohn (2009, p. 169) complements this proposition by calling for the consideration of learners' experience, technological skills, and culture if the instructional designers and instructors are to 'design real learning environments for and empirically understand the interactions of – real users whose skills develop and possibilities increase as they experience gains'. Supporting this view, Jones (2015, p. 227) argues that technological affordance 'only becomes affordances in relation to the user'. In other words, to enhance the affordances of technologies regarding adults' learning processes, the instructors and designers of the course/program should make the technologies easy to use as specified by technologies acceptance models on the one hand, and provide adequate support to enhance learners' self-efficacy in using the technological tools on the other hand.

As can be seen, to design an OBL learning environment that takes into account adult learners' needs, different learning theories (for example, andragogy, constructivism and socio-constructivism), motivation theory (self-determination theory), self-directed learning theory, technology acceptance models and technological affordance concepts have an important role to play. Thus, to cover these perspectives in a concise but expandable framework will be worthwhile to guide OBL designs. Attempting to achieve this goal, Milheim (2012), based on Maslow's hierarchy of human needs, namely physiology, safety, relationships, self-esteem, and self-actualisation, suggests different strategies OBL instructional designers and instructors can apply to meet learners' needs. While Milheim (2012) has contributed by elaborating different types of needs, the author mainly appeals for the provision of material, rather than addressing how the content matters, especially for adult learners' needs. In addition, at different levels of needs, information and communication (ICT) tools seem to be present in more than one category, which makes it difficult to interpret it as a learner needs' framework or an instructional framework to respond to learners' needs. In addition, Abela (2009)

postulates that Maslow's needs typology may be too rigid and hence result in the overlapping of the categories. For example, Milheim (2012) identifies that the provision of a checklist of essential items should be obtained as a physiological need and pre-course preparation as a safety need. These two can be subsumed in both categories.

Given these limitations, ERG theory (Alderfer, 1972) reclassifies human needs into three categories, and can be employed as a promising alternative framework to the Maslow's need hierarchy. At the lower end of the need hierarchy is existence, in which Maslow's physiology and safety needs register (Abela, 2009). Needs for interpersonal relationships resemble 'relatedness', and similarly, needs for self-actualisation and self-esteem share the essence of personal desire for 'growth' (Abela, 2009).

Contrasting with the conceptualisation of adult learners' needs, ERG theory is capable of demonstrating how OBL can be designed to support adult learners' motivational and cognitive processes, as well as providing a favourable technology-supported learning environment to augment the knowledge construction process.

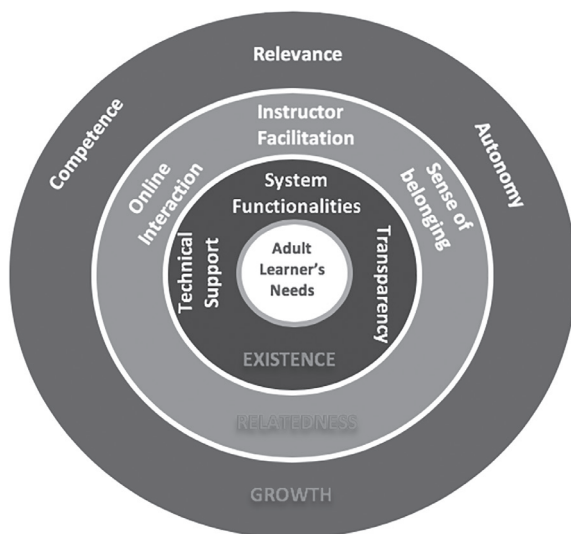
In respect of adults' learning motivation, ERG theory is more applicable to interpret different types of motivation. On the one hand, the motivation to equip oneself with new knowledge and competences either for one's own cognitive interest or professional advancement is matched with the needs of personal growth in the ERG model. Based on andragogy assumptions (Knowles, 1984), self-determination theory (Ryan, & Deci, 2000), constructivism, as well as self-directed learning, we propose three elements subsumed under this dimension, namely autonomy, relevance, and competence, respectively. On the other hand, the motivation of building up new social relationships and relief from daily routines (Boshier, 1991) are aligned with the dimension of 'relatedness'. Viewed from a social inclusion perspective, ERG theory also supports the interpretation of how participating in educational programs can enhance the two essential dimensions of social inclusion as proposed by De Greef, Segers, and Verté (2012), namely connections and self-activation.

The second category of adult learners' need, namely 'relatedness', consists of the need to interact with peers online (peer online interaction), facilitation from the instructors, and a sense of belonging

to the classroom community. This dimension, therefore, embraces literature in online knowledge construction and socio-constructivism.

The third dimension of adult learners' needs 'existence', concerns the physical and technical conditions that help them better organise their self-directed learning and perform online learning activities. This dimension addresses the physical obstacles that adult learners may encounter in an OBL environment. Thus, transparency in learning goals and assessment, aspects of system functionalities such as ease of use and technical support, make up this category of adult learners' needs.

The three dimensions of adult learners' needs along with their constituents are presented in Figure 1. At the heart of the framework are adult learners and it is suggested that when addressing their needs, input variables such as socio-demographics and motivational orientations are important elements to take into account. Viewed from the inside, the first layer of the framework represents the 'existence' needs. The second layer demonstrates the needs for 'relatedness', and the third the needs for (personal) 'growth'.



**Figure 1. A conceptual framework for adult learners' needs in OBL based on the ERG theory**

In the following section, different elements of adult learners' needs, according to each layer underpinned by relevant theoretical and empirical findings, will be elaborated.

### **Existence needs**

When adult learners start an OBL program, it is important that they are informed about what is expected of them as learners and, more importantly, are provided with optimal physical conditions to learn. This signifies the existence need, defined as the need for being informed about expectations as well as being able to comfortably perform one's learning activities in the OBL environment. The former enhances one's feeling of safety in terms of being informed and reduces any confusion that may occur. The latter helps to alleviate adult learners' anxiety with using technology, especially novice learners, and to enable them to harness ICT to achieve their learning outcomes.

### ***Transparency***

Based on Maslow's hierarchy of human needs, Milheim (2012) highlights that feelings of safety in terms of transparency in assessment and expectation are crucial, which echoes other findings. For example, Poll, Widen, and Weller (2014) and Dixon (2014) maintain that articulating clear learning goals and outcome expectations from the beginning is one of the most important factors to help increase retention. Clear expectations in terms of assessment will help clarify how learner contributions to different online learning activities are recognised and credited (Pelz, 2010). In other words, it provides a *raison d'être* for the investment of effort in both individual and collaborative learning activities, given the limited time adults can reserve for learning. This is significant because while the learning itself normally intrinsically motivates adult learners, they are also goal-oriented, viewing time as 'left' rather than 'passed by' (Knowles, 1984). Clear expectations in assessment will not only guide the learning process but will also help to show how different types of learning goals can be achieved and evaluated. From a social cognitive perspective, clear goals and expectations can facilitate learning because they help learners to evaluate their progress and they motivate learners to invest the effort to achieve or address any problems with their achievement (Locke, & Latham, 2002).

### ***System functionalities***

When classroom instructions have been augmented and, in some cases, replaced by technologies, the functionalities of the technologies; for example, web-based applications or learning management systems (LMS), receive substantial attention from course designers. Educational researchers have widely adopted the theory of planned behaviour and technology acceptance models as the overarching frameworks that explain learners' intention and actual use of technology (Park, 2009; Wu, Tennyson, & Hsia, 2010). Chang et al (2015) have reviewed the features of technology-supported learning environments most valued by learners and found that the two dimensions; that is, perceived usefulness and perceived ease of use, are the most important features that have been confirmed. These are also the two factors incorporated in the two prominent technology acceptance models, namely the Technological Acceptance Model (TAM) (Davis, 1989) and the Unified Theory of Acceptance and Usage of Technology (UTAUT) (Venkatesh et al., 2012).

### ***Technical support***

A recent study from Asoodar et al. (2016) helps further validate the role of perceived ease of use and perceived usefulness regarding the technological dimension. One of the contributions of Asoodar et al. (2016) is that the authors have found that factors related to learners, such as attitudes towards online courses, and computer and Internet anxiety, do not uphold their significant roles in yielding a pleasant learning experience. The authors attribute this non-significance of learner-related constructs to the availability of institutional support and instructors' technological competence and guidance. Recent findings in literature also support the perspective that instructors' support in terms of technology is necessary for student learning. For example, Diep, Zhu, Struyven, and Blicck (2017), and Hung and Chou (2015) find that instructors are expected to maintain a role of technology facilitator in an OBL environment. This is because the instructors' technology competence has a positive effect on the students' attitude towards the course. In other words, knowing that the instructors will promptly solve technological issues will reduce learners' computer anxiety and reinforce their confidence in using ICT to achieve their learning goals.

In addition to the support that helps the learners easily manipulate the online tools, it is also important that the instructional designers and instructors should pay attention to help learners to develop digital literacy, that is:

*‘[T]he awareness, attitude and ability of individuals to appropriately use digital tools and facilities to identify, access, manage, integrate, evaluate and synthesise digital resources, construct new knowledge, create media expressions, and communicate with others, in the context of specific life situations, in order to enable constructive social action; and to reflect upon this process’*

(Martin, 2006, p. 155)

As a result, they can responsibly and critically use the online learning resources for learning purposes. This is because recent literature reveals that the assumption that the new generation of learners; that is, those who were born after 1984, are digital natives may not necessarily hold true. Kirschner and De Bruyckere (2017) report from their synthesis of literature that despite being exposed to modern technologies, the capacity to use these intensively for academic purposes is still limited. Therefore, the instructors remain facilitators for learners' development of digital literacy. When digital literacy is at a high level, learners' self-efficacy increases accordingly, which in turn motivates them to be more active in online interaction (Prior, Mazanov, Meacheam, Heaslip, & Hanson, 2016).

To equip adult learners with sufficient conditions to effectively perform online learning activities, the three types of learners' existence needs should be made available. These include transparency, instructors' technical support, and system functionalities, that is, perceived ease of use and perceived usefulness.

### ***Relatedness needs***

The 'relatedness' need in ERG theory emphasises interpersonal and social relationships. This is in line with the dimension of extrinsic motivation of expanding one's social networks (Boshier, 1991), and the literature on online knowledge construction (Hrastinski, 2009).

### ***Sense of belonging***

Bransford, Brown, and Cocking (2000) postulate that online instructional design should emphasise the establishment of a community that underlines mutual trust and respect. Knowles (1984) and Cercone (2008) similarly suggest that a collaborative and respectful learning climate should be fostered in alignment with adult learners' preferences. This perspective coincides with Mahan and Stein's (2014) premise of effective teaching practice for adults, which states that for adult learners to learn best, the affective aspect of the learning environment should not be neglected. Empirically, there are a number of studies that capture this affective dimension as reviewed by Chang et al. (2015). For example, Chang and Chuang (2011), Koul, Fisher, and Shaw (2011), Newhouse (2001), and Diep, Cocquyt, Zhu, and Vanwing (2017) validate that sense of community, trust, identification, and affiliation are significant social and affective factors proven to facilitate more engagement, mutual support, collaboration, and relationship building among learners. While existing under different names, we propose that these constructs can be subsumed under the term 'sense of belonging' for its broad coverage, as defined by McMillan and Chavis (1986). The authors refer to sense of belonging as 'the feeling, belief, and expectation that one fits in the group and has a place there, a feeling of acceptance by the group, and willingness to sacrifice for the group' (McMillan, & Chavis, 1986, p. 10).

### ***Online interaction (with peers)***

Whereas the sense of belonging addresses the affective aspect of the online learning community, the need to interact with other peers and the instructors is undoubtedly integral to one's learning. Rooted in socio-constructivism (Vygotsky, 1978), the online interactions among the learners themselves have received substantial attention from both theoretical and empirical studies. One of the most influential frameworks on learners' interaction is the CoI (Garrison et al., 2000). The authors postulate that for high quality learning to occur, the instructors should create opportunities for online collaboration and interaction and pay attention to facilitating these online discourses so that high levels of cognitive presence can be fostered. It is through this process that learners can have opportunities to legitimately participate



in a knowledge community (Lave, & Wenger, 1991), which is also the tenet stressed in recent learning paradigms such as connectivism (Siemens, 2005) and networked learning (Anderson, 2010). In addition, Laurillard (2012) strongly supports that peer interaction should be the core element in OBL design because it is through this process that learners can obtain internal (self) or external (peer) feedback for their performance and understanding.

### ***Instructors' facilitation***

Laurillard (2012) and the authors of the CoI (Garrison et al., 2000) as well as findings from a great number of studies on online interaction, share the perspective that facilitation from the instructors concerning learners' online interaction is necessary. This is because, without such facilitation, the interactions among learners are more likely to be socially centred or deviate from the topics under discussion. By the same token, Schaap, van de Schaaf, and Bruijn (2016) assert that for discussions to be more intense and reflective, the instructors' strategies in terms of conceptual and metacognitive interventions should be intentional and preferably explicit. From a student perspective, the need to interact with peers and the preference for the instructors' presence, guidance, and facilitation of online discussion are also confirmed in the works of Asoodar et al. (2016) and Hsieh and Tsai (2012). More specifically, facilitation strategies such as directing learners towards the topic, supporting the learners in preparing arguments, giving feedback, and helping to sustain the online discussion, have demonstrated to be effective in enhancing the quality of learner–learner interaction (Hsieh, & Tsai, 2012).

Thus, we propose that to help learners feel more engaged, better achieve their learning goals, and further establish and reinforce social relationship with peers, their relatedness needs of feeling belonged to the classroom community, interactions and collaboration with peers, and facilitation from the instructors should be underlined.

### ***Growth needs***

Adult learners have different types of motivation, which can be summarised as intrinsic –for one's own cognitive interest, and extrinsic – for qualifications, employability enhancement, professional advancement,

and external pressure such as sustaining unemployment benefits (Boshier, 1991). Irrespective of the types of motivation adult learners may initially bring along with them, these types of motivation are subject to change due to the learning environment. For example, a learner may start with an extrinsic motivation of obtaining a qualification, but this may change to an intrinsic one if he/she finds that the learning is relevant, and is substantially supported to become more actively engaged and has ownership of his/her own learning. Conversely, a learner starting with an ideally intrinsic motivation may be disappointed due to high expectations as to what the course/program can offer. This is to say, adult learners need to be supported to satisfy the ‘intrinsic individual desire for personal growth’ (Abela, 2009, p. 12) by instructional approaches that help them sustain intrinsic motivation to learn the course through. In this respect, self-determination theory (Ryan, & Deci, 2000) is a relevant theory. Self-determination theory postulates that learners will be intrinsically motivated to learn if their needs of autonomy and competence are satisfied (Niemic, & Ryan, 2009). Cercone (2008) and Knowles (1984) share the opinion that due to their characteristics, namely being more professional and problem-orientated with a rich reservoir of lived experiences, adult learners have a strong desire for learning content that is relevant and immediately applicable. Consequently, they have a strong need for relevance in terms of the presented knowledge. In other words, to cater for the needs of personal growth and support the motivation to pursue this goal in the long run, autonomy in one’s learning, support for competence development, and the provision of relevant learning content should be in place.

### ***Autonomy***

From a self-determination perspective, autonomy refers to ‘the experience of behaviour as volitional and reflectively self-endorsed’ (Niemic, & Ryan, 2009, p. 135). This perspective entails that the instructional designers and instructors should align learning activities with the learners’ needs and learning goals. These are informed by an understanding of the learners’ prior knowledge, skills, and their epistemic beliefs (Bransford et al., 2000). Applying this perspective in adult education, a great number of studies draw on adult learners’ characteristics and discuss implications for online learning practices. The researchers insist that adult learners should be

afforded the opportunities to take ownership of their studies, namely respect for learner autonomy or diverse talents and ways of learning (Bangert, 2004; Ross-Gordon, 2003; Walker, & Fraser, 2005). This is in resonance with learning theories such as socio-constructivism (Vygotsky, 1978) and andragogy (Knowles, 1984), both of which underline the importance of prior knowledge and a humanistic approach in teaching and learning. In addition, by paying attention to adult learners' differences in learning styles, prior-accumulated knowledge and living experiences, the instructional designers and instructors have addressed what Milheim (2012) terms self-actualisation needs; that is, helping learners to fulfil their learning goals and aspirations through a facilitated approach. Adequately addressing diverse ways of learning or individual differences is considered to be crucial in emphasising the need of autonomy in adults' learning.

### ***Competence***

The need for competence means that adult learners should be enabled and supported in such a way that they perceive certain behaviours or learning goals as 'effectively enacted' or as being attainable (Niemic, & Ryan, 2009, p. 135). For competence to be enhanced, learners need to have access to feedback that helps them improve their learning, experience a feeling of efficacy (Bandura, 1986), or be able to achieve the learning goals at hand (Niemic, & Ryan, 2009). Additionally, learners need to be cognitively challenged by learning activities that help them to test and go beyond their academic capacities. Thus, feedback and learning activities that have a formative nature are necessary to support learners' competence.

Ausburn (2004), Cercone (2008) and Mupinga, Nora and Yaw (2006) postulate that while being expected to be independent regarding their learning, adults also need scaffolding, which can be presented in the form of instructors' timely feedback on assignments, in order to clarify confusion, reduce anxiety and move on to higher levels of cognition. Bandura (1986) maintains that in addition to goal setting, feedback on the extent to which a goal has been achieved will possibly reinforce learners' self-efficacy, which subsequently triggers their self-regulatory process or self-directed learning (Zimmerman, & Martinez-Pons, 1990; Zimmerman, 2000). This view has been supported by empirical findings such that instructors' feedback in a timely manner at classroom and

individual levels is a significant predictor of both learning outcomes and satisfaction (Asoodar et al., 2016). With the affordances of interactive web-technologies, it is believed that instructors have more options to offer feedback for learners to realise their strengths and weaknesses concerning the learning objectives, hence better facilitating adults' learning.

Laurillard (2012, p. 69) suggests that the online learning environment should provide opportunities for formative assessment on a regular basis to 'make students' thinking available to themselves, their peers, and their instructors'. In doing so, the instructors will have a grasp of the students' progress and their current understanding of the topic under discussion, hence enabling them to provide further support and scaffolding to help the learners achieve the goals. In addition, by making their thinking visible, learners can also receive intrinsic feedback, a term coined by Laurillard (2012); that is obtained by contrasting their articulations of understanding against those from the learning environment or from peers. In this way, the learners can re-formulate and modify their conceptualisation. In the same vein, Bransford et al. (2000) and Boud (2000) advocate the use of formative assessment to augment the learning process and prepare learners to be capable of formulating the formative assessment for their own work. These formative assessments or assessment for learning can manifest in the forms of reflective journals, e-portfolios (Mason, Pegler, & Weller, 2004), opportunities to reflect on the learning content and experiences in the form of a blog, and instructors' monitoring of students' feelings and active participation. Thus, it is recommended that for learners to better learn from assessment, the instructors should implement different approaches to make explicit the progress that learners have made. Therefore, formative assessment incorporated in diverse assessment methods is the one critical element that should be emphasised. In doing so, the learning of adults is likely to become more reflective, which echoes principles of transformative learning (Mezirow, 2000).

### **Relevance**

The instructional designers and instructors' decisions concerning the learning content should be based on the analysis of how important and relevant certain concepts and skills are based on the learners' needs. This perspective is strongly reflected in andragogy (Knowles, 1984), constructivism (Huang, 2002; Jonassen, 1991), and socio-

constructivism (Vygotsky, 1978). The constructivist perspective posits that learning activities should be based on learners' prior experiences and should provide opportunities to integrate these experiences when attempting to acquire new knowledge (Jonassen, 1991). Viewing knowledge construction as a process of meaning-making, socio-constructivists endorse that learners should be engaged in meaningful interactions, which include 'responding, negotiating internally and socially, arguing against points, adding to evolving ideas, and offering alternative perspectives with one another while solving some real tasks (Woo, & Reeves, 2007, p. 19). In an online learning environment, Reeves, Herrington, and Oliver (2002) propose that learning activities should be authentic in nature to promote meaningful interactions. These learning tasks should: (1) have a relevance to learners' real-life experience; (2) be ill-structured and complex enough to trigger extended discussions and multi-perspective solutions; and (3) result in outcomes or products valuable to the learners per se (Reeves et al., 2002). In the same vein, Mahan and Stein (2014, p. 143) suggest that 'adults learn best when they integrate learning to the rest of their lives'.

Therefore, while online interactions with peers is important to construct knowledge in OBL, the nature of the learning content and tasks should be designed in such a way that is relevant to the lived experience of the adult learners.

## **Discussion**

In reviewing different instructional frameworks related to OBL design, adult learning theories, motivation theories, technology acceptance models, and empirical studies addressing adults' learning needs and preferences, we have proposed and constructed in this paper a conceptual framework that incorporates the most relevant findings on the learning needs of adults in OBL environments.

By dividing the learning needs into three categories, namely 'existence', 'relatedness', and 'growth', the paper aims to capture more nuanced learning needs from an adult learner's perspective. Employing ERG theory as the overarching framework, the three dimensions of needs in this conceptual framework attempt to capture adult learners' needs from both positivist and subjectivist perspectives. In other words, the needs identified are to help adult learners optimally perform the learning

activities designed to achieve the learning goals on the one hand and to sustain their motivation during the learning process on the other hand. To address the former objective, the framework relies on adult learning theory, namely andragogy (Knowles, 1984), and technology acceptance models (Davis, 1989; Venkatesh et al., 2012) as well as (online) learning theories and frameworks; for example, connectivism (Siemens, 2005), networked learning (Nielsen, & Danielsen, 2012), social-constructivism, and the CoI (Garrison et al., 2000). These frameworks have scrutinised different aspects of adult learning and in this paper they are put together to provide a more comprehensive framework for the recognition of adult learners' needs in OBL. For example, the perceived ease of use in the TAM (Davis, 1989) has been incorporated to cater for adults' need to feel at ease (existence need) navigating the online learning platform while instructors' facilitation and online interaction with peers in the CoI have been included to respond to the need of 'relatedness'. Using self-determination theory (Ryan, & Deci, 2000) and andragogy as the two main theories to foster and sustain adult learners' motivation, the framework has tapped into adult learners' need for 'growth', namely cognitive and personal development. This dimension necessitates instructional design to pay attention to adult learners' ownership of learning or autonomy and provide both the environment and scaffolding in the form of feedback; for example, to help adult learners build up the competence for themselves.

It is acknowledged that the elements subscribed under each category are not all-inclusive. As McLoughlin and Lee (2008) remark, additional elements can be added when instructional designers and instructors are better informed about other social and contextual factors related to adults and their learning; for example, the learners' digital competences and socio-demographics, their expectations, or the new affordances of web technologies. Nevertheless, by comparing different frameworks and their complementary features, the proposed framework in this paper has taken into account the most important aspects of adults' learning needs that can serve as both a reference for instructional design and render more discourses in terms of refining our knowledge of how adults learn in an OBL environment.

As for future works, we propose that the framework can be validated by both qualitative and quantitative approaches, taking into account different stakeholders' perspectives, first and foremost the instructors and the adult learners who are key actors in the teaching and learning process.

For example, a qualitative study employing the Delphi method (Linstone, & Turoff, 1975), consisting of a consensus on the indicators of each dimension of adult learners' needs from a group of stakeholders such as instructors, program coordinators, curriculum developers, and learners, is worthwhile to refine the framework. More importantly, as informed by the researchers, there are individual differences on the part of the adult learners that should receive research attention in terms of the framework validation. For example, Ke and Kwak (2013) find that the older learners place more value and have a greater need of online participation than their younger peers. Thus, age can be a variable expected to affect the perception of needs in the 'relatedness' dimension, which needs to be addressed. Additionally, for adult learners who display greater readiness for online learning, chances are that their needs in terms of instructor's support for technical issues will be the least compared to others. In other words, we recommend that socio-demographics and learners' characteristics deemed crucial to online learning should be included to subsequently justify the framework.

With regard to the relationships among the three dimensions of needs, Alderfer (1969) proposes that there is either a regression or a progression mechanism in effect. The former indicates that once a higher level of needs; for example, growth is not satisfied, individuals will seek more gratification from the lower needs, which is relatedness in this case. The latter maintains that once lower levels of needs; for example, relatedness are satisfied, individuals will desire satisfaction of higher level needs; that is, growth. Based on adult learning theories and online knowledge construction literature, we are more inclined to adopt the second view: lower levels of needs including 'existence' and 'relatedness' should be fulfilled to support the achievement of 'growth' needs. Thus, we propose that these two layers should be viewed as facilitating rather than competing with each other. These relationships can be tested by path analyses to confirm and enrich our understanding of how these dimensions of adult learners' need are related to one another, which is subsequently useful for OBL instructional design.

It is plausible to maintain that when different dimensions of learning needs have been thoroughly met, then outcomes other than academic achievement can be obtained. For example, researchers have found that the more intensively one participates online, the more social capital he/she can establish (Steinfeld, Ellison, & Lampe, 2008; Zhong, 2011). Therefore, it is worth using both the learning outcome and social outcomes; for example,

social capital, as the response variables to test how much the variation can be accounted for by different dimensions of adult learners' needs.

## Conclusion

If adult education is to fulfil both educational and societal goals, adult learners' needs should be the first to be addressed. To achieve these goals, 'the creativity and energy of the instructional designers and course instructors' (Johnson, & Aragon, 2003, p. 42) are the critical drivers, not the technology (McLoughlin, & Lee, 2008). In this process of instructional design, it is crucial to understand what motivates and facilitates adult learners to fully engage in the collaborative learning process and their self-directed learning while minimising those technological barriers that may interfere with their online participation. In this light, the proposed framework of adult learners' needs in an OBL environment, based on ERG theory (Alderfer, 1972), is useful because it helps to deconstruct these motivators and facilitators into specific elements underpinned by both theoretical and empirical findings in the scope of adult learning, motivational theories, online learning theories, and technological acceptance models.

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