CHERE@LU
Working Paper Series
Working Paper No. 3, June 2020

A missing element of online higher education students' attrition, retention and success: an analysis through a systematic literature review

Olga Rotar

Lancaster University

Abstract

Online learning has facilitated higher education in many ways and made it more flexible and available for learners with multiple responsibilities. In spite of these benefits and rapid developments of online education, available information regarding graduation rates suggests that the vast majority of online learners drop out. This paper provides a review of the 30 empirical studies that investigate factors that influence online students' experience in online higher education reported for a period of 10 years, from 2009 to 2019. The paper discusses the results of the analysis against the existing theoretical model of students' attrition, retention and progress. The results of the literature review suggest 15 factors that can influence students' online learning experience. These factors are grouped into four main sections: (a) student factors; (b) course/programme factors; (c) social factors, and d) support factors. Identified factors are discussed against existing theoretical models and a missing element in the considered models is highlighted.

Keywords: attrition, retention, success, adult students, online higher education.

Introduction

Online education is considered to be an attractive option for students with multiple responsibilities due to its flexible structure (Ilgaz & Gülbahar, 2015; Ladell-Thomas, 2012; Bocchi et al., 2004), lower costs, and an opportunity to learn where and when it suits an individual (Ilgaz & Gülbahar, 2015). However, although an open entry policy allows students to easily enrol into online programmes, it does not automatically grant proffered learning benefits. In fact, the majority of online learners do not graduate (Woodley & Simpson, 2014).

Although it is difficult to extract clear figures on students' dropout in online education, the literature suggests that the graduation rates in online programmes are much lower than in those offered in a traditional setting. Simpson (2013) and Woodley and Simpson (2014) stress the low graduation rates in well-established online programmes in the United Kingdom (UK) and internationally. They point out that in the UK graduation rates vary from 0.5% to 20%. In the United States of America (USA), large private institutions such as the University of Phoenix and in South Africa the University of South Africa have 5% and 6% graduation rates respectively (Woodley & Simpson, 2014). The lower graduation rates from online distance programmes represent what Simpson (2013) calls a 'distance education deficit'[1], which needs to be further investigated. The research on the dropout phenomenon is still ongoing and the issue remains an "elephant in the room" (Woodley & Simpson, 2014, p.462).

A large number of studies have been conducted with the aim to examine online learners' experiences and perceptions in online education in order to understand what contributes to their learning progress and success (Hart, 2012; Park & Choi, 2009; Simpson, 2004). Findings emphasise the diversity of online students in regard to their background, personal characteristics and skills and the complexity of factors that influence their online learning

---

[1]According to Simpson (2013) 'distance education deficit' occurs when distance graduation rates are significantly lower (one-quarter or less) in comparison to the graduation rates in equivalent traditional programmes.

experience and behaviour. The aim of this paper is to examine and bring together the variety of factors that have been associated with adult students' learning experiences in the context of online higher education and discuss the result of the literature review in relation to the existing theoretical models on students' attrition, retention and progress.

While online distance education has been seen as offering multiple benefits for learners (see Coomley and Stephenson's (2001) meta-analysis) and providing unprecedented opportunities for students to learn from where they are and at their own pace, that opportunity comes at a high price. For students, failure to complete their first online course may lead to lower self-confidence or self-esteem and discourage them from registering for other online courses (Moore & Kearsley, 1996). Dropout experience can cause social isolation and economic loss (Rumberger, 1987). Therefore, a re-examination of the past theoretical models should be done on a regular basis to include and test implications of the empirical research.

Theoretical background

There have been a few attempts to systematically explain processes of students' learning through the development of a number of theoretical models of students' attrition, retention and progress. This paper aims to discuss findings from past empirical studies against those theoretical models. Among the most recognised works that have been employed in this review are the theoretical models of Spady (1970), Tinto (1975), Bean and Metzner (1985), Kember (1995), and Rovai (2003), and a more recent model of Falcone (2011).

Tinto (1975) built upon the model of student dropout developed by Spady (1970). Spady applied Durkheim's theory of suicide to explain the process of dropping out from learning. Durkheim's theory (1952) explains that those individuals who are less able to integrate into society due to the incompatibility of values are less likely to commit suicide. Both Spady (1971) and Tinto (1975) found an analogy between Durkheim's concept of suicide and students' dropout. Tinto's model synthesised research on students' attrition and Durkheim's theory of suicide (1952) and depicts students' learning as a progression through social and academic intellectual interactions and integration. The model presumes that students' backgrounds and personal characteristics determine their ability to integrate into the learning environment, interact with others, and, consequently, affect students' social and academic outcomes and decision to retain or drop out (Eaton & Bean, 1993). Tinto's model, however, could not be directly applied to the online learning context due to differences between traditional and distance student populations and between the learning delivery formats.

To provide an explanation of attrition for adult students (aged 24 years and older) who study part-time and off-campus, Bean and Metzner (1985) developed A Conceptual Model of Non-traditional Undergraduate Student Attrition. Their model contained the following factors: students' background, academic characteristics, environmental factors, and academic and psychological outcomes as a result of the direct and indirect influence of factors in the model. Due to the nature of the non-traditional student cohort, the authors took an environmental factor into account, suggesting that barriers associated with the external environment can contribute to students' integration. Bean and Metzner's model stressed the influence of the external environment, such as financial and familial difficulties,

or professional workload, on students' socialisation, persistence and level of goal commitment.

Another comprehensive theoretical frame for the analysis of adult students' progress in distance education has been developed by Kember (1995). His longitudinal model has been drawn from Tinto's work, his own research, and an extensive literature review to theoretically explain the connections between the factors of the model. The assumptions that distinguished Tinto's model from the one proposed by Kember were that adult students face significantly different barriers when studying part-time and often have additional family and work responsibilities. To represent adults' competing demands in the model, Kember adds specific prerequisites or personal traits, such as gender, family status, prior learning and work experience, etc. These prerequisites, his model suggests, direct adult students towards one of the two paths of the model. The model distinguishes two types of integration - social and academic. Social integration is explained as the ability of a student to integrate learning with other life and work responsibilities, while academic integration is associated with the elements of the course of study in their different forms and the interrelationships between the educational institution and the learner. Kember's model has been tested in several quantitative studies and within a number of national settings (Woodley et al., 2001). Despite the existing difficulties with item validation, quantitative tests supported the structure of the main variable in the model and allowed Kember to conclude that the model was reliable (Kember, 1995). Woodley et al. (2001), however, pointed out some weaknesses in Kember's inventory instrument, specifically that its individual items do not measure the same concept, and concluded that his model offers little to our understanding of adult students' progress in distance education.

Rovai (2003) provided an integrated model of students' persistence - A Composite Persistence Model. He synthesised the two models of Tinto and Bean and Metzner. Rovai's model consists of four elements, namely student characteristics and student skills (factors required before admission) and external and internal factors (critical for consideration after admission).

Recently, a more comprehensive and detailed conceptual model has been proposed by Falcone (2011), where additional dimensions absent from the past models have been added. Among new elements that are emphasised in Falcone's model are individual forms of self-efficacy (or habitus), social, economic, cultural and other forms of capital, and different levels of belongings to communities within and beyond the educational institution that shape students' goals and educational and social commitments. All these elements, in their turn, influence students' learning experiences, perceptions of their academic fit and behaviours in regard to learning processes and progress.

The considered theoretical models provide a useful conceptual frame that in this literature review is used to discuss identified factors, rather than limiting the process of analysis by the direct application of a particular theoretical frame.

Approach to the Literature Review

The main purpose of this article is to identify factors or elements that influence students' learning experience and analyse them against the considered theoretical models. To achieve these aims, I reviewed existing studies that had reported empirical findings in peer-reviewed

journals from 2009 to 2019. The Scopus database was used to search for relevant studies. The variety of key words and word combinations, such as "adult student", "non-traditional student", and "online higher education" were used as search terms. Among inclusion criteria that set the boundaries for this review were the student population (adult learners) and the study setting (online higher education). Only studies published in English language were reviewed. Additional studies of relevance to the phenomenon of interest were identified through a 'snowball' method by using reference lists of the selected articles (Webster & Watson, 2002). Initially, I identified 144 studies. Out of that total, I eliminated those studies that pertained only to: (a) online classes in K-12 settings; (b) non-empirical studies, including conceptual papers or opinion papers because the assertions were not empirically proven; (c) doctoral dissertations or conference presentations which were not officially published in journals; and (d) magazines or research project reports which were not peer-reviewed. Although the quality of these studies met all criteria, the studies were excluded when they did not directly address the focus of my analysis. Consequently, I selected and examined 30 empirical studies on students' experiences in online higher education that had been published within peer-reviewed journals. In the quantitative studies, only factors that were suggested as statistically significant have been reported. In the qualitative studies, factors that have been named by the author as critical for online students' experience were included in the analysis.

The paper scope is limited in two ways. First of all, as mentioned above, it looks at the adult student cohort in online higher education. And secondly, it considers factors that have been linked to adult students' experiences and their progress, rather than on attrition, retention or dropout factors. Within this scope, the collection of the evidence has been guided by the following research question: What are the factors that are suggested to affect adult students' progress in online higher education?

To distinguish different factors, I employed the Constant Comparative Method (Lincoln & Guba, 1985). From the initial number of factors, I selected one random factor and assigned it to the first category. Then I chose another factor and compared it to the previously selected one to see the similarities between them and decided whether this factor needed to be added to the first category or should represent a new category. In a similar way, all the identified factors were evaluated in terms of their similarity to the factors identified previously. The process was repeated until all the identified factors had been grouped into 15 categories: individual characteristics, academic background, relevant experiences, skills, students' expectations, psychological attributes, course design, course flexibility, relevancy of the course, engagement, connectedness, interactions, social presence, institutional support, and external support. These categories were further grouped into four main sections: (a) student factors; (b) course/programme factors; (c) social factors; and d) support factors (see Table 1).

Results

The four main groups of factors that are suggested to be critical for students' online learning experience are student factors, course/programme factors, social factors, and support factors. Table 1 presents a categorisation and the description of the identified groups of factors and their constituting sub-factors.

Factor	Sub-factor	Factor attributes
Student factors	Individual characteristics	• Individual characteristics (Xu & Jaggars, 2013; Martin and Bolliger, 2018)
Student factors	Academic background	• GPA (Willging & Johnson, 2009; Knestrick et al., 2016; Cochran et al., 2014)
Student factors	Relevant experiences	• No experience of successful completion of any previous online courses (Hachey, 2012) • Prior experience of withdrawal (Cochran et al., 2014)
Student factors	Skills	• Self-regulation skills (Lee et al., 2013; Geduld, 2016; Lai, 2011) • Self-efficacy (Geduld, 2016; Backs, 2017; Reilly, Gallagher-Lepak, & Killion, 2012; Harnett, St. George, & Dron, 2011; Backs, 2017; Joo, Oh, & Kim, 2015; Cox, 2018) • Self-regulation, and self-discipline (Lee, Choi, & Kim, 2013) • Competency in using information communication technologies (Beqiri, Chase, & Bishka, 2009; Pena & Yeung, 2010; Cole, Shelley, & Swartz, 2014) • Time management (Cox, 2018; Holder, 2007; Ilgaz & Gülbahar, 2015)
Student factors	Students' expectations	• Students' expectations about the difficulty of the course (Bourdeaux & Schoenack, 2016; Pierrakeas et al., 2004) • Expectations of the instructor's feedback (Gaytan, 2015; Martin & Bolliger, 2018)
Student factors	Psychological attributes	• Persistence (Park & Choi, 2009; Yang, Baldwin & Snelson, 2017) • Satisfaction with the course (Chyung, Winiecki, & Fenner, 1998; Noel-Levitz, 2011) • Students' motivation (Kim & Frick, 2011; Zaborova, Glazkova & Markova, 2017) • Locus of control (Lee et al., 2013)
Course factors	Course design	• Course design (Marsh et al., 2017; Rienties & Toetenel, 2016)

Factor	Sub-factor	Factor attributes
Course factors	Course flexibility	• The flexibility of online learning (Sorensen & Donovan, 2017) • Online modality (Wladis et al., 2014) • Integration of learning with working experience (Kahu, 2013)
Course factors	Relevancy of the course	• Relevancy of the course (Yang et al., 2017) • Higher importance of career development or personal development goals (Stoessel et al., 2014) • Interest in and the utility of the programme for the student's professional career (Yang et al., 2017) or personal development (Stoessel et al., 2014; Knestrick et al., 2016)
Social factors	Interactions	• Successful online interactions and relationships with other students (Baxter, 2012; Burns, 2013) • Collaborative learning activities (Nistor & Neubauer, 2010) • Lack of interaction (Cole et al., 2012) • Othering (Phirangee & Malec, 2017) • Online interactions (Phirangee & Malec, 2017; Kuo & Belland, 2016; Cole, Shelley, & Swartz, 2014; Kuo et al., 2014)
Social factors	Engagement	• The amount of time spent on communication activities (Rienties & Toetenel, 2016) • Engagement (Martin & Bolliger, 2018; Banna et al., 2015; Britt, 2015; Meyer, 2014; Backs, 2017; Perišic, 2012; Wlodkowski, 2008; Chametzky; 2013a; Stone & O'Shea, 2019)
Social factors	Connectedness	• Connectedness (Boyle et al., 2010; Johnson, 2014) • Teacher connection (Stone & O''Shea, 2019)
Social factors	Social presence	• Social presence (Richardson, Yukiko, Lv, & Caskuru, 2017)
Support factors	Institutional support	• Proactive support (Simpson, 2013; Russo-Gleicher, 2013) • Tutors' support and guidance (Brown et al., 2015) • Targeted, promoted, appropriate and easily available support (Stone & O'Shea, 2019)

Factor	Sub-factor	Factor attributes
		• Instruction and feedback (Gaytan, 2015) • Embedded within the curriculum support (Stone, 2017)
Support factors	External support	• Support from family and at the workplace (Park & Choi, 2009; Pierrakeas, Xenos, Panagiotakopoulos & Vergidis, 2004; Lee, Choi & Kim, 2013)

Table 1: Factors suggested as being influential on adult students' online learning experience

In the following sections I explain the role of each group of factors and its constituent sub-factors on students' online learning as they have been described in the empirical studies.

Student factors

Individual characteristics

Evidence of the influence of students' individual characteristics on their learning is mixed. Park and Choi (2009) conducted research aiming to investigate the influence of *individual characteristics* on online learning behaviour. Their analysis showed no significant impact of age, gender, education, and employment on student attrition, concluding that personal characteristics had little influence on students' academic success. A more recent study, however, showed that there was a difference in persistence and learning outcomes among students of a different gender (Xu & Jaggars, 2013). Authors found that "males, Black students, and students with lower levels of academic preparation experienced significantly stronger negative coefficients for online learning compared with their peers, in terms of both course persistence and course grade" (p.23). Martin and Bolliger (2018) also analysed the effect of age, gender, and years of online learning experience differences on students' perceptions of engagement strategies, which were associated with learning outcomes. They found that for female students it was more important to use additional online resources to explore topics in more depth than for male students. Students in the younger group thought it was more important for instructors to send or post regular announcements or email reminders than students in the older age group. The use of an informal virtual lounge and a regular post from tutors was valued more by students with a low level of online course experience (Martin & Bolliger, 2018).

Academic background

The influence of the academic background is not clear as the results of the empirical studies are contradictory and the factor needs further exploration (Willging & Johnson, 2009; Knestrick et al., 2016; Cochran et al., 2014). Knestrick, Wilkinson, Pellathy, Lange-Kessler, Katz, and Compton (2016) revealed that in combination, grade point average (GPA), specialty programme, full- or part-time status in the previous term, and student age accounted for 27% of the variance of withdrawal or leave of absence. Three other variables, age over 40 years, programme of study, and number of credits enrolled in term 1 were identified as statistically significant predictors of withdrawal and a leave of absence.

Students over 40 years old had nearly twice the odds of leaving the programme. Cochran et al. (2014) examined how individual characteristics of students may be associated with the likelihood of withdrawal from online classes and suggested that prior performance in college classes, previous dropouts from online courses, students' gender and acquiring academic loans were significant predictors of online students' retention. Based on their findings, the authors suggested that there is a need to identify and support online learners at risk, namely freshmen, those with lower GPA and prior experience of withdrawal. In contrast, Willging and Johnson (2009) while investigating reasons for student dropout from the online masters' programme at the University of Illinois at Urbana-Champaign, analysing factors that can predict the likelihood of students' withdrawal from the course, found that students who completed the first two courses and the male students are more at risk of dropout. However, they found that dropouts tend to have a higher GPA, while students employed as directors, managers and coordinators were less likely to withdraw from the study. These clearly contradictory results suggest the need for a further focus on the role of students' academic background in shaping their learning experience in online programmes.

Relevant experiences

Past research suggests that students with little or no online learning experience are at greater risk of attrition (Cochran et al., 2014). Hachey (2012) found that students who had not successfully completed any previous online courses had very low retention rates compared to those who successfully completed prior online classes, suggesting that previously unsuccessful online learners need to be provided with additional support.

Student skills

There is evidence of the effect of student skills on academic success. This ranges from the ability to effectively allocate time and make realistic timetables, to academic self-efficacy (Geduld, 2016), self-regulation, and self-discipline (Lee, Choi, & Kim, 2013). Some quantitative findings have shown that competency in using information communication technologies (Beqiri, Chase, & Bishka, 2009; Pena & Yeung, 2010) is related to satisfaction, which in its turn influences academic performance (Cole, Shelley, & Swartz, 2014). Researchers also evidenced the effects of time and environment management skills on students' academic performances. Findings of these studies suggest that students who highly appreciated management strategies, who effectively allocated time and made realistic timetables, were less likely to drop out (Holder, 2007; Lee, Choi & Kim, 2013). On the other hand, Hashim et al. (2011) concluded, based on their findings, that adult students need as much guidance and motivation as their younger counterparts, due to the weaker cognitive links of adult students undertaking online distance courses (Hashim et al., 2011). Cercone (2008) also argued that the preference that adults have for self-directed learning does not necessarily mean that they all have the skills necessary for successful self-direction (Cercone, 2008).

Another important factor in terms of a student's skills that has been emphasised in the literature is academic self-efficacy. Bandura (1997) defines this as a student's belief in his or her capability to successfully perform the provided tasks. Wang and Newlin (2002) revealed that academic self-efficacy is a crucial factor in the success of online learning. Geduld (2016) states that students who are less self-regulated risk failure and dropout in the challenging

milieu of open distance learning, and his study results suggested that high achievers were more self-regulated.

There is evidence of the impact of time management skills on students' academic success (Cox, 2018; Holder, 2007; Ilgaz & Gülbahar, 2015). Pierrakeas et al. (2004) and Romero and Barbera (2011) interviewed students who dropped out of their online courses, to gather information about the reasons for such decisions. The authors came to the conclusion that a main cause of students' withdrawal was related to the lack of student awareness of the effort needed for successful online learning, which was especially critical for the so-called 'time-poor' adults (Romero & Barbera, 2011). By comparison, students who were able to effectively allocate time and set up realistic timetables were more likely to be satisfied with their studies and succeed in an online course (Ilgaz & Gülbahar, 2015; Pierrakeas et al., 2004). In addition to the time-management skills, Clay et al. (2009) suggested that the difficulty of the online course and students' self-discipline have an influence on academic success. However, although Romero and Barbera (2011) agree that time availability is one of the constituents of successful continuation of learning in an online environment, their argument is somewhat different from that of Clay and colleagues.

Geduld (2016) argues that in online and distance learning, students need different self-regulated learning strategies to complete an assignment, prepare for examinations, do self-studying, and to prepare for classes. For academic achievement, he suggested, it is critical for students who study in isolation to become aware of their level of self-regulation[2] to be in control of their own learning. Lai's (2011) study examined the impact of Self-Directed Learning Readiness (SDLR) of a mature group of student professionals into learning effectiveness. Based on the findings, she determined that SDLR appeared to be the critical element of students' learning success. Hashim and his colleagues (2015) questioned the need and the ability of adult online learners to maintain independent learning and argued that adult students need as much guidance and motivation as their younger peers (Hashim et al., 2015). Findings and arguments above suggest that there might be variations in the level of self-directedness among adult students, with a different extent of impact on their academic success.

Another important concept that has been emphasised in the literature in relation to learning is academic self-efficacy, which Bandura (1986) defined as a student's belief in his or her capability to successfully reach set goals. This concept has recently gained much attention in the context of online learning (Ng & Baharom, 2018; Cox, 2018), suggested as an important element for learners' satisfaction (Backs, 2017), engagement (Reilly, Gallagher-Lepak, & Killion, 2012), motivation (Harnett, St. George, & Dron, 2011), and achievement (Backs, 2017; Joo, Oh, & Kim, 2015; Cox, 2018). Previous research indicated that issues related to the lack of self-efficacy in an online learning environment included students' ability to complete provided tasks (Shen, Cho, Tsai, & Mara, 2013) and might cause such emotional stresses as feelings of isolation (Betts, 2009), frustration (Artino & Stephens, 2009) and fear (Fey, Emery, & Flora, 2008). Backs (2017) suggests that the impact of low self-efficacy might be substantial for students. Her study shows that students' self-efficacy was maintained through their engagement with interactive learning objects, provision of the

---

[2]According to Zimmerman, self-direction is an extent to which learners are metacognitively, motivationally and behaviourally active in their own learning (Zimmerman, 1989, p.329).

feedback, and activities that involved an application of the lesson content. These activities can be seen as high-engagement instructional strategies. Informal support, such as communication with the instructor and peers, were strong supporters of self-efficacy. Backs argues that learners with low self-efficacy for online learning can reach a state of low engagement and low achievement and emphasise the importance of such learning supports as communication with tutors and fellow students.

Students' expectations

Bourdeaux and Schoenack (2016) found that adult students felt less satisfied with their online learning when tutors did not meet their expectations. Among main expectations, their study participants named instructional clarity and respect from online tutors. Additionally, poor use of online pedagogical tools made students feel frustrated due to the mismatch of the tutors' teaching behaviours and their expectations for respect. Similarly, Ladell-Thomas (2012) in her research found out that clear objectives, well-structured content and a variety of authentic tasks were named as important expectations among online students. More recently, Gaytan (2015) and Martin and Bolliger (2018) found that the instructor feedback was an important expectation of online learners in their study. Students expected timely, constructive and more comprehensive feedback from tutors that would allow them to engage in corrective behaviours to improve performance. In addition, they appreciated when the tutor was developing relationships with them. Martin and Bolliger (2018) also reported that there was an expectation from tutors to develop a relationship with the student and to provide prompt feedback.

Psychological attributes

Such psychological attributes as persistence (Yang, Baldwin & Snelson, 2017), satisfaction with the course (Chyung, Winiecki, & Fenner, 1998; Noel-Levitz, 2011), students' motivation (Kim & Frick, 2011; Zaborova, Glazkova & Markova, 2017) and locus of control (Lee et al., 2013) have been suggested as critical dropout or retention factors, as have active learning, love of learning, and independent learning (Lai, 2011).

Persistence[3] has been found to be a strong predictor of students' retention in online education (Yang, Baldwin & Snelson, 2017). In an attempt to categorise persistence factors, Yang et al. (2017) distinguished individual and programme persistence attributes. They proposed two groups of persistence factors: individual persistence attributes, related to career goals, invested time and effort, and perceived usefulness of learning; and programme attributes include relevancy of the programme to personal or professional interests, satisfaction with the programme, and the connection between coursework and job promotion. Based on their findings, Yang et al. (2017) argue that, although both individual and programme factors might have an influence on students' persistence in fully online programmes, the programme attributes - relevancy of program to individual/professional needs and satisfaction with courses, program, and learning outcomes - were mentioned as critical by more than 90% of study participants. Among other persistence factors that were shown to have an influence on students' progress and success in online learning, scholars name academic locus of control and metacognitive self-regulation skills (Lee, Choi & Kim,

---

[3] Persistence is defined by Park and Choi (2009) as the number of factors that determine a student's ability to progress in and successfully complete the course.

2013; Park & Choi, 2013), timely communication with instructors, and peer and family support. Motivation has also been suggested as an internal factor strongly related to persistence in online learning (Park & Choi, 2013). The impact of each persistence factor will be considered in more detail later in this article.

Learning satisfaction, which refers to how positively students perceive their learning experiences, has been suggested as an important indicator of academic outcomes (Chyung, Winiecki, & Fenner, 1998; Noel-Levitz, 2011). Specifically, it was argued that students' satisfaction with the learning process can lead to higher persistence and greater commitment to the programme (Allen & Seaman, 2003; Noel-Levitz, 2011). Chyung, Winiecki, and Fenner's (1998) findings showed that dissatisfaction with the learning environment was the reason for dropout among nearly half of the students participating in their study.

Among positive satisfaction factors identified in the analysed empirical studies are interaction (Cole, Shelley, & Swartz, 2014; Lee, 2012), perceived self-efficacy, sufficient time management skills (Ilgaz & Gülbahar, 2015) and convenience of the course (Cole et al., 2014). Among negative satisfaction attributes in online courses, researchers have named issues with technology (Ilgaz & Gülbahar, 2015; Lee, 2014) and suggest that satisfaction decreases in parallel with a decrease in information communication technologies competencies (Pena & Yeung, 2010). However, although acknowledging that learner satisfaction is important, Rienties and Toetenel's (2016) analysis showed that satisfaction and academic retention were not even mildly related to each other. The authors emphasised that this finding contradicted previous research on student satisfaction, suggesting two possible explanations. First, there was evidence that although the big proportion of online learners were satisfied with their learning experience (Kirschner et al., 2006; Koedinger et al., 2013), learning is not always a pleasant and comfortable experience, but sometimes could be hard and difficult. For continued learning, it is important to make mistakes, and receive useful feedback and support from tutors. Therefore, Rienties and Toetenel (2016) argued that an exclusive focus on learner satisfaction might distract institutions from understanding the impact of learning design on learning experiences and academic retention. This argument questions the need to focus on students' satisfaction in their online learning programmes to the need for designing the activities that stretch learners to their maximum abilities and ensuring that they eventually pass the module (Rienties & Toetenel, 2016, p.340).

Motivation has been named as an internal factor strongly tied to persistence in online learning (Moos & Stewart, 2013). Attributes of students' motivation are multiple and vary from study to study. For instance, Kim and Frick (2011) suggested that perceived difficulty could negatively impact student motivation. Zaborova, Glazkova and Markova (2017) showed that motivation for online learning in the online programmes at one Russian university was dominated by such factors as a possibility to combine work and studies, time and place flexibility, and tuition fees. Harnett et al. (2011), however, stated that learner motivation for engaging in online learning results from a more complex combination of situation-based internal and external factors. According to Harnett and his colleagues, the internal motivation factors included instructor interactions and learning activities, with interest, relevance, and value associated with future application tasks; the external factors were learners' family and job responsibilities.

Locus of control[4] is another psychological attribute that proved to be critical for online learning success (Lee & Choi, 2010). Lee et al. (2013) examined the differences between persistent and dropout students enrolled in an online course, finding that successful learners had a higher level of locus of control, or responsibility for their own learning and stronger self-regulation skills in contrast with dropout students.

Lai's (2011) analysis of the data revealed that three factors (active learning, love of learning, and independent learning) and two constructs (Internet skills and information evaluation) of network literacy were significant predictors of online learning effectiveness of civil servants (Lai, 2011).

Examination of psychological attributes suggests that such factors as persistence, satisfaction, motivation and locus of control are interconnected and can individually, or in combination with other factors, contribute to students' successful completion of online courses.

Course factors

Course design

Lee and Rha (2009) investigated the influence of instructional design and interactions on student achievement and satisfaction. Their findings indicated dual results, showing that learners who participated in a structured course were more satisfied with the course structure, whereas learners who participated in the interactive course were more satisfied with interpersonal interaction (Lee & Rha, 2009). More recently, Li, Marsh, Rienties, and Whitelock (2017), in their large-scale replication study comparing the learning experiences between 16,670 new and 99,976 continuing students, found that learning design parameters, such as assessment, career focus, teaching materials, and workload, have a strong impact on overall learner satisfaction. More importantly, according to their results, new learners experience the learning environment in a substantially different manner compared to continuing students. For instance, continuing learners were 70% less likely to have positive overall learner satisfaction if the modules they studied did not contribute to the achievement of their wider qualification aim. Another interesting example is that there was a difference between new and continuing students with regard to age, suggesting that specific attention should be given to new learners of a mature age who register for modules at the Open University (OU). An overall suggestion to online institutions to improve students' satisfaction is that they need to continuously monitor and act upon changing needs of online learners.

Another large-scale study was conducted by Rienties and Toetenel (2016), who linked 151 modules and 111,256 students at the UK OU to investigate the influence of the course structure on students' behaviour, satisfaction and performance, using multiple regression models. Their findings strongly indicated the importance of learning design in predicting and understanding the behaviours and performance of students in blended and online environments. In line with proponents of social learning theories, they suggested that the primary predictor for academic retention and a way to enhance academic retention was the

---

[4] Lee and Choi refer to the locus of control as an individual's perception of the causes or influences of their outcomes (Lee & Choi, 2010).

time learners spent on communication activities. Rienties and Toetenel (2016) provided us with crucial insights beyond the specific research findings within a single module or discipline. The most important findings in their study were that learning design activities and the number of communication activities strongly influenced learners' satisfaction and academic retention. The results of Rienties and Toetenel's (2016) study provided important insights for online educators, who tended to design online learning tasks for cognition rather than focusing on social elements of learning activities (Arbaugh, 2014; Koedinger et al., 2013; Rienties et al., 2012; Ferguson & Buckingham Shum, 2012).

Course flexibility

Kahu (2013) explored whether age and mode of study impact on students' departure intentions in a single New Zealand university setting. The result of the data analysis showed that distance learners hold a greater potential for engagement with learning activities due to the opportunity to integrate their learning with working experience. Sorensen and Donovan (2017) conducted an online survey and interviewed 396 students who withdrew from online courses, to find out what factors influence students' decisions to withdraw from their online learning. Interestingly, the results of their analysis suggested that those students who value flexibility of online learning, specifically, an opportunity to work following a personal schedule, was a main reason for withdrawal from the course, mentioning the difficulty to combine learning with busy work or life schedules. This insight suggests that the taken-for-granted flexibility of online learning, although being attractive for busy learners, might not be appropriate for those struggling to juggle multiple responsibilities, and in order to increase retention, more guided instruction and support is needed for these learners. This study provides evidence that students tend to withdraw from online learning not due to the lack of academic abilities, but because of the challenges to combine learning and other commitments. Similar insight on the need for more guidance has been offered by Farrell, Ward, Jennings, Jones, Jorgenson, Gubbels-Smith, Dolovich and Kennie (2016) who described factors affecting students' participation in online programmes and the reasons for dropping out. They concluded that in order to enhance participation in online learning, students should be provided with comprehensive information regarding the programme schedule (Farrell et al., 2016).

Relevancy of the course

Yang et al. (2017) distinguished two groups of persistence factors, namely personal and programme. Personal attributes included interest in and the utility of the programme for the student's professional career, and invested time and efforts, while programme attributes were course relevance to the achievement of career goals or personal objectives, and the impact of the gained degree on professional progress. Although scholars emphasised the impact of both personal and programme factors, programme attributes have been found to have a significantly stronger impact on students' persistence with the majority (90%) of their respondents naming course relevancy for their professional or personal needs and the satisfaction with the programme and learning outcomes as the important factors. Stoessel et al. (2014) revealed the higher importance of career development or personal development goals related to a lower risk of attrition. The analysis also suggested that students aged 50 years and over are at a lower risk to dropout due to their learning goal orientation towards personal development, and greater value of the opportunity for personal growth and development through learning. This suggestion is

interesting, as it offers an alternative view of the benefits of learning compared to those promoted by the market-driven discourse on learning outcomes.

Social factors

Engagement

Student engagement was defined by Newmann, Wehlage, and Lamborn (1992) as the "student's psychological investment in an effort directed toward learning, understanding, or mastering the knowledge, skills, or crafts that academic work is intended to promote" (p.12). Backs (2017) stressed that if learners failed to become engaged in their online course, their participation in course activities decreased. Consequently, the lack of participation made it more challenging for the learner to keep up with course content. As the learner missed out on important learning opportunities, it became more difficult to do well in the course. Martin and Bolliger (2018) argued that in an online learning context, student engagement enhanced student satisfaction, diminished the feeling of isolation, increased motivation for learning, and improved academic performance. Banna et al. (2015), Britt (2015) and Meyer (2014) also emphasised the importance of learners' engagement to online courses, believing that it would lead to better academic progress due to the efforts involved with students' cognitive development, in order to create their own knowledge. Banna et al. (2015) argue that, while the quality of the content of learning materials played a main role in the past, it was an engagement that was a centre for self-directed online learning.

Online interactions

Interactions and engagement are closely related, and even used interchangeably in an online learning context. Fostering interaction is critical for students' retention in online learning. For instance, previous research relates academic success in online higher education to factors that increase feelings of disconnection and isolation, namely physical isolation and the lack of interaction between students (Phirangee & Malec, 2017; Kuo & Belland, 2016). Cole, Shelley, and Swartz (2014), researching the factors affecting satisfaction regarding online education at a university, determined that the rarity of interaction is a negative factor which affects satisfaction. Previous research also relates academic success in online higher education to factors that increase feelings of disconnection and isolation, namely physical isolation and the lack of interaction between students (Phirangee & Malec, 2017; Kuo & Belland, 2016). Interaction has been identified as a critical factor in determining student success (e.g., academic achievement or performance) and satisfaction, as well as programme effectiveness (e.g., persistence and retention) in online education (Martin & Bolliger, 2018). Kuo and Belland (2016) used self-reporting to assess adult learners' interaction, Internet self-efficacy, and satisfaction. Their results indicated that learner-content interaction and learner-instructor interaction were significant predictors for student satisfaction in online settings. Where group activities were not provided, results corresponded to previous studies that argued that in fully online learning environments, learner-content interaction and learner-instructor interaction were the most influential factors of student satisfaction (Kuo et al., 2013, 2014; Martin & Bolliger, 2018). Interaction among learners did not usually have a significant effect on student satisfaction in fully online settings, unless specific group work or projects were assigned to online students (Kuo et al., 2014). It has also been reported that students' sense of belonging to a

community, engagement, and interactions with faculty are all related to retention (Lee & Choi, 2011; Martin & Bolliger, 2018). In their study, Martin and Bolliger (2018) found that online student interaction with peers was valued by students, particularly for those who liked to work on collaborative group activities or assignments, and enjoyed being involved in discussions. Nevertheless, previous research has shown that learners might face challenges to maintain interaction in their online courses, and do not always adapt well to constructivist learning frequently used in an online environment (Backs, 2017). Backs (2017) emphasised that learners might miss the benefits of the learning community if they experienced difficulty participating in peer interaction. Moore (2013) also stressed the importance of the interplay between learners, content, and the instructor. He purported that online learners wanted to feel connected so that they maintained motivation, suggesting that such a connection could be maintained through instructional design.

Connectedness

Connectedness, closely related to the notion of interaction, was highlighted as an important factor in an online setting (Boyle et al., 2010; Carnwell et al., 2001). In the study conducted by Boyle et al. (2010), students reported factors such as isolation, little sense of connection and belonging, difficulty in maintaining engagement in, and motivation for, learning. Carnwell et al. (2001) divided the concept of 'connectedness' into three themes: continuity (i.e. course tutor meeting with students at each study day); structure (university regulations, dates and deadlines); and a 'human touch' (genuineness, caring and commitment to students) (Carnwell et al., 2001). Researchers proposed that if these aspects of connectedness were realised, disconnectedness might be significantly reduced. Additionally, disconnection might be avoided by a problem-solving and caring approach to students experiencing isolation (Carnwell et al., 2001). Johnson (2014) noticed that in an online environment there is a risk for a student to experience a sense of disconnection from the class and/or the instructor (Johnson, 2014).

Social presence

Social presence, the ability to perceive others in an online environment, has been shown to impact student motivation and participation, actual and perceived learning, course and instructor satisfaction, and retention in online courses. It is argued that instructors should aim to foster social presence in order to maintain effective online learning (Richardson, Yukiko, Lv, & Caskuru, 2017). Social presence has been shown to influence students' learning experiences and learning outcomes. For example, Richardson et al. (2017) suggested that social presence has an influence on students' motivation and participation in learning in an online environment, and may accurately predict student satisfaction, arguing that little research has looked at measures of social presence. Another study, conducted by Arbaugh (2014) to measure which factors predicted satisfaction and learning outcomes, confirmed that learners' behaviour, as measured by social presence, carefully predicted learner satisfaction and academic performance.

Support factors

Institutional support

There is extensive evidence for the importance of proactive support for overcoming dropout and the importance of making that support motivational (Simpson, 2013). The literature analysis showed that institutional support plays an important role in how learning is experienced and emphasise different forms of institutional support. Gaytan (2015) compared faculty and student perceptions regarding factors that affect retention, found that students would like to receive more instruction and more comprehensive feedback from instructors which would allow them to engage in corrective behaviours. Stone and O'Shea (2019) stress the importance of the learning support that is "embedded within the curriculum as much as possible, hence delivering it where and when it is most needed" (Stone, 2017, p.10). This includes academic skills, technology support and personal support services. Providing easy links to timely, relevant support within their learning content is an important way to point students in the right direction for the appropriate help they may need, at the right time. Designing content to include support, so that, "rather than it's over here, outside of the discipline base, it's actually embedded" ensures that required skills training is "integrated within the classroom task, and usually within the assessment task" (Stone, 2017, p.10). Farrell, Ward, Jennings, Jones, Jorgenson, Gubbels-Smith, Dolovich and Kennie (2016) concluded that in order to enhance participation in online learning, students should be provided with comprehensive information regarding the programme schedule (Farrell et al., 2016). Similarly, Gaytan (2015) found that students would like to receive more instruction and more comprehensive feedback from instructors which would allow them to engage in corrective behaviours. Brown et al. (2015) showed that those students who were less proactive in seeking support were strongly relying on a study guide. This finding suggests that less proactive learners need tutors' support and guidance in developing adequate online interaction skills and building online relationships with others, emphasising the idea of the role of the teacher in shaping the online learning culture. This idea is in line with Jones's (2010) suggestion that academic caring is important for online students, and with Russo-Gleicher's (2013) argument that teachers could do more in their central position to refer at-risk students to learning support. In other words, participant stories indicate that a teacher, even from a distance, can influence how students seek support. Chen and Jang (2010) analysed the mediating relationship between the need for contextual support and students' motivation and their self-determination. They found that motivation/self-determination do not predict learning outcomes. Their findings supported the assumption of self-determination theory that intrinsic, extrinsic motivation, and amotivation are concepts that should be differentiated, and suggest that the way contextual support is applied may have direct effect and indirect effects on learning outcomes.

External support

Previous literature has also discussed the importance of support from family and work (Park & Choi, 2009; Pierrakeas, Xenos, Panagiotakopoulos & Vergidis, 2004; Lee, Choi & Kim, 2013). Sorensen and Donovan (2017) examined retention in for-profit online universities of undergraduate students and made some general conclusions concerning dropout factors. They suggested that a lack of support could be a key contributing factor to students dropping out. The authors also stated that although students were drawn to online learning

for flexibility and convenience, some of them may have misjudged the need for time commitment and their ability to balance multiple priorities (Sorensen & Donovan, 2017). The authors suggested that it could not be assumed that students' dropout from online for-profit universities because they struggle academically; the likelihood of students dropping out due to poor academic performance may be higher earlier in a programme. However, students who dropout further along the programme may dropout due to factors other than poor academic performance; scholars support the idea that it may be a combination of factors that lead to students dropping out of online programmes (Sorensen & Donovan, 2017). Park and Choi (2009) also suggested that support from family and in the workplace were important for an adult distance learner to be successful. Lee, Choi and Kim (2012) also argued that the perceived lack of proactive student support had a negative impact on student retention, as did the lack of a formal orientation programme for distance education students. Those findings were in line with previous research that indicated that effective student support systems could have a positive impact on student retention (Simpson, 2003). However, Lee, Choi, and Kim (2012) did not find significant relationships between course completion and support from family and work. Although their findings are contradictory to previous research, the authors point out that this could be due to the indirect effect of other variables, and that more research is needed to understand that suggested influence (Lee, Choi & Kim, 2012).

Discussion

Existing theoretical models suggest critical elements of students' retention (Tinto, 1975), attrition (Bean & Metzner (1985), progression (Kember, 1995) or persistence (Rovai, 2003; Falcone, 2011) in either traditional or distance learning mode. These well-known models emphasise the importance of academic and social integration for the successful progress in learning. They suggest that unsatisfactory integration of the student into the social life of the educational institution, or an incompatibility with the learning demands are major causes for a student decision to withdraw from a course of study. However, the review of the existing empirical studies revealed new factors that are critical for students' academic progress in an online education which are explicit in the existing models considered.

I identified four groups of factors that have been suggested as critical for successful online learning. Among them are student factors, course factors, social factors and support factors. The revision of these factors in relation to an existing theoretical model of students' attrition, progress and retention revealed the lack of attention to the importance of support factors in the previously formulated models and weak emphasis on the course factors, particularly the relevance of the course for the professional development.

 All considered models incorporated students' personal characteristics as an important element. The examined literature also suggests that the consideration of individual differences in understanding the students' online learning experience is critical and should not be neglected. However, the influence of the individual differences with regard to age, gender and previous educational background, personal characteristics, circumstances, commitments and so on should be better examined in relation to their influence on the students' online learning experience due to the contradictory results in the empirical research.

In all well-known models, the role of course factors is not fully explained. For instance, such sub-factor of the course factors as the relevance of the course for professional development and career seems to be missing in the existing models, although its importance has been argued in the empirical research results.

More importantly, the criticality of support factors is not explicitly emphasised, showing a significant gap in understanding the influence of support factors for students' persistence, progress and success. Yet, in the analysed empirical studies, institutional support and support from family and work were referred to as predictors of a student's persistence in online learning (Park & Choi, 2009; Perry, Boman, Care, Edwards & Park, 2008; Pierrakeas, Xenos, Panagiotakopoulos & Vergidis, 2004). This is due to the fact that most online students are employed either as part- or full-time workers and have additional family responsibilities. Therefore, online distance learners have fewer opportunities than their campus counterparts to interact directly with available institutional support services or have less immediate contact with their tutors. For online students' groups, predominantly represented by the adult population of different ages and levels of commitments (Street, 2010; Buck, 2016), a supportive study environment and an availability of support services are among the most significant factors of successful learning (La Padula, 2003; Buch, 2016; Simpson, 2013). Rather than limiting educational opportunities for those students, positive support from the institution and family, friends and employers is necessary for their successful progress in their online learning (Holder, 2007). Prominent researchers in the area of online learning, Simpson (2013) and Woodley and Simpson (2014) argue that institutional support is critical, and that proactive institutional support is one of the ways to reduce online students' attrition. Nevertheless, as mentioned earlier, this element is missing or not explicitly emphasised in existing theoretical models of students' attrition, retention and progress.

The existing discrepancy between the results in the available literature and the factors indicated in theoretical models may be due to the fact that online students, fortunately for educational institutions, tend to blame themselves for their failure and underestimate the role of the institutional support in their learning experience (Woodley & Simpson, 2014).

Conclusion

The systematic literature review of the factors that influence online students' learning experiences identified four groups of elements that are critical for consideration. Three groups of factors, namely student factors, course factors and social factors are apparent in existing theoretical models of students' attrition, retention and progress. The last group of identified factors - support factors - seems to be neglected or not explicitly emphasised. Online students with multiple responsibilities have various challenges and constraints in their learning. While they can successfully manage most of their challenges, environmental support plays significant roles in affecting (positively or negatively) their learning experience. Although Kember's model (1995) explained that supportive environments and encouragement are necessary for students to achieve social integration in which they are able to successfully embrace study with their work, family and social commitments, the support factors that are critical for creating such an environment are not fully investigated

and further research is needed to better integrate support factors into the theoretical models of online students' progress, persistence and success.

None of the considered models explicitly reflect forms of institutional support to their students, such as, for example, the provision of supportive online learning environments in higher education. The flexible nature of online education enables adult students, with a variety of commitments, to integrate more successfully academically, professionally, socially and psychologically to their learning if they are supported adequately. The absence of support factors in the considered theoretical models requires a re-examination of how we address the problem of student dropout, attrition and retention, which predominantly assumes the influence of a great variety of factors on students' learning experience, but completely neglects the role of institutional and external support. In existing models, it appears to be an unexamined assumption that individual learners are fully responsible for their successful adaptation into the academic and social life of their educational institution through the challenges of transition from their past routing to their academic life.

Further research

Current research appears to be moving away from understanding how to better support online students to a more extensive examination of attrition, retention and persistence factors that constitute different theoretical models. The result of this systematic literature review suggests that there is a fundamental problem of neglecting the role of institutional and external support on student learning in an online learning environment (Simpson, 2013; Woodley & Simpson, 2014). Examination of existing empirical studies showed that students expect a greater participation from an educational institution in their adaptation to both academic and social dimensions of their learning and suggests educational institutions can influence students' online learning experiences through their proactive interventions. Given the lack of attention to the element of support in the previous models, further research could be undertaken to examine and test the significance of the proactive institutional and external supports in shaping online students' experience and their decisions to withdraw or persist.

References

Bean, J. P., & Metzner, B. S. (1985). A conceptual model of nontraditional undergraduate student attrition. *Review of educational Research*, 55(4), 485-540.

Bourdeaux, R., & Schoenack, L. (2016). Adult student expectations and experiences in an online learning environment. *Journal of Continuing Higher Education,* 64(3), 152-161. doi:10.1080/07377363.2016.1229072

Bocchi, J., Eastman, J. K., & Swift, C. O. (2004). Retaining the online learner: Profile of students in an online MBA program and implications for teaching them. *Journal of Education for Business,* 79(4), 245–253.

Boling, E. C., Hough, M., Krinsky, H., Saleem, H., & Stevens, M. (2012). Cutting the distance in distance education: Perspectives on what promotes positive, online learning experiences. *Internet and Higher Education,* 15(2), 118-126. doi:10.1016/j.iheduc.2011.11.006

Botha, J. -., & Coetzee, M. (2016). The influence of biographical factors on adult learner self-directedness in an open distance learning environment. *International Review of Research in Open and Distance Learning,* 17(4), 242-263.

Carnoy, M., Rabling, B. J., Castano-Munoz, J., Montoliu, J. M. D., & Sancho-Vinuesa, T. (2012). Who attends and completes virtual universities: The case of the open university of catalonia (UOC). *Higher Education,* 63(1), 53-82. doi:10.1007/s10734-011-9424-0

Cheng, B., Wang, M., Yang, S. J. H., Kinshuk, & Peng, J. (2011). Acceptance of competency-based workplace e-learning systems: Effects of individual and peer learning support. *Computers and Education,* 57(1), 1317-1333. doi:10.1016/j.compedu.2011.01.018

Cocquyt, C., Diep, N. A., Zhu, C., De Greef, M., & Vanwing, T. (2017). Examining social inclusion and social capital among adult learners in blended and online learning environments. *European Journal for Research on the Education and Learning of Adults,* 8(1), 77-101. doi:10.3384/rela.2000-7426.rela9111

Coetzee, M. (2014). Exploring the mediating role of graduate attributes in relation to academic self-directedness in open distance learning. *Higher Education Research and Development,* 33(6), 1085-1098. doi:10.1080/07294360.2014.911260

Coetzee, M. (2014). Measuring student graduateness: Reliability and construct validity of the graduate skills and attributes scale. *Higher Education Research and Development,* 33(5), 887-902. doi:10.1080/07294360.2014.890572

Coleman, J. A., & Furnborough, C. (2010). Learner characteristics and learning outcomes on a distance Spanish course for beginners. *System,* 38(1), 14-29. doi:10.1016/j.system.2009.12.002

Conrad, D. (2009). Cognitive, instructional, and social presence as factors in learners' negotiation of planned absences from online study. *International Review of Research in Open and Distance Learning,* 10(3), 1-18.

Coomey, M., & Stephenson, J. (2001). Online Learning: it is all about dialogue, involvement, support and control-according to the research. In J. Stephenson (ed.), *Teaching and Learning Online: Pedagogies for New Technologies*. London: Kogan Page.

Cornelius, S., Gordon, C., & Ackland, A. (2011). Towards flexible learning for adult learners in professional contexts: An activity-focused course design. *Interactive Learning Environments,* 19(4), 381-393. doi:10.1080/10494820903298258

Dwyer, D., Thompson, D. E., & Thompson, C. K. (2013). Adult learners' perceptions of an undergraduate HRD degree completion programme: Reasons for entering, attitudes towards programme and impact of programme. *Assessment and Evaluation in Higher Education,* 38(2), 131-141. doi:10.1080/02602938.2011.608906

Falcone, T. M. (2011). *Toward a New Model of Student Persistence in Higher Education*. In: ERIC, Paper presented at the Annual Meeting of the Association for the Study of Higher Education. Charlotte, NC, Nov 19, 2011. (ERIC Document Reproduction Service No. ED530661).

Fernández-Toro, M., & Hurd, S. (2014). A model of factors affecting independent learners' engagement with feedback on language learning tasks. *Distance Education,* 35(1), 106-125. doi:10.1080/01587919.2014.891434

Gravani, M. N. (2015). Adult learning in a distance education context: Theoretical and methodological challenges. *International Journal of Lifelong Education,* 34(2), 172-193. doi:10.1080/02601370.2014.982728

Hashim, R., Ahmad, H., & Abdullah, C. Z. (2010). Assessing the attitudes of distance learners toward the use of ict in education. *Turkish Online Journal of Distance Education,* 11(2), 125-134.

Hashim, R., Ahmad, H., & Ahmad, N. (2011). Evaluation of andragogy: Cognitive engagement of distance learners. *International Journal of Technology Enhanced Learning,* 3(3), 322-331. doi:10.1504/IJTEL.2011.040228

Hart, C. (2012). Factors associated with student persistence in an online program of study: A review of the literature. *Journal of Interactive Online Learning*, 11(1).

I-Jan, Y., Kao, C. -., Huang, C. -., & Chang-Kuo-Wei. (2013). Exploring adult learners' preferences toward online learning environments: The role of internet self-efficacy and attitudes. *Anthropologist,* 16(3), 487-494.

Ilgaz, H., & Gülbahar, Y. (2015). A snapshot of online learners: E-readiness, e-satisfaction and expectations. *International Review of Research in Open and Distance Learning,* 16(2), 171-187.

Ismail, I., Ali, A. S. M., & Azman, N. (2012). Discomfort in E-learning: Does it impact learners? *International Journal of Emerging Technologies in Learning,* 7(2), 39-42.

Ke, F. (2010). Examining online teaching, cognitive, and social presence for adult students. *Computers and Education,* 55(2), 808-820. doi:10.1016/j.compedu.2010.03.013

Ke, F. (2013). Online interaction arrangements on quality of online interactions performed by diverse learners across disciplines. *Internet and Higher Education,* 16(1), 14-22. doi:10.1016/j.iheduc.2012.07.003

Ke, F., & Xie, K. (2009). Toward deep learning for adult students in online courses. *Internet and Higher Education,* 12(3-4), 136-145. doi:10.1016/j.iheduc.2009.08.001

Kember, D. (1995). *Open learning courses for adults: A model of student progress.* Educational Technology.

Kuo, Y. -., & Belland, B. R. (2016). An exploratory study of adult learners' perceptions of online learning: Minority students in continuing education. *Educational Technology Research and Development,* 64(4), 661-680. doi:10.1007/s11423-016-9442-9

Ladell-Thomas, J. (2012). Do-it-yourself information literacy: Self-directed learning at a distance. *Journal of library & information services in distance learning*, 6(3-4), 376-386.

Lee, Y., & Choi, J. (2013). A structural equation model of predictors of online learning retention. *Internet and Higher Education,* 16(1), 36-42. doi:10.1016/j.iheduc.2012.01.005

Loizzo, J., Ertmer, P. A., Watson, W. R., & Watson, S. L. (2017). Adult MOOC learners as self-directed: Perceptions of motivation, success, and completion. *Online Learning Journal,* 21(2) doi:10.24059/olj.v21i2.889

McDougall, J. (2015). The quest for authenticity: A study of an online discussion forum and the needs of adult learners. *Australian Journal of Adult Learning,* 55(1), 94-113.

Meyers, C. A., & Bagnall, R. G. (2017). The challenges of undergraduate online learning experienced by older workers in career transition. *International Journal of Lifelong Education,* 36(4), 442-457. doi:10.1080/02601370.2016.1276107

Mohd Nor, N. M. (2011). Understanding older adult learners in distance education: The case of universiti sains malaysia. *Turkish Online Journal of Distance Education,* 12(3), 229-240.

Moore, M.G., & Kearsley, G. (1996). *Distance education: A systems view*. Belmont, CA: Wadsworth Publishing.

Nagelsmith, L., Bryer, J., & Yan, Z. (2012). Measuring motivation and volition of nursing students in nontraditional learning environments. *Journal of Nursing Measurement,* 20(2), 90-112. doi:10.1891/1061-3749.20.2.90

Park, J. -., & Choi, H. J. (2009). Factors influencing adult learners' decision to drop out or persist in online learning. *Educational Technology and Society,* 12(4), 207-217.

Pena, M. I. C., & Yeung, A. S. (2010). Satisfaction with Online Learning: Does Students' Computer Competence Matter?. *International Journal Of Technology, Knowledge & Society*, 6(5).

Remedios, R., & Richardson, J. T. E. (2013). Achievement goals and approaches to studying: Evidence from adult learners in distance education. *Distance Education,* 34(3), 271-289. doi:10.1080/01587919.2013.835776

Remedios, R., & Richardson, J. T. E. (2013). Achievement goals in adult learners: Evidence from distance education. *British Journal of Educational Psychology,* 83(4), 664-685. doi:10.1111/bjep.12001

Rovai, A. P. (2003). In search of higher persistence rates in distance education online programs. *The Internet and Higher Education*, 6(1), 1-16.

Simpson, O. (2004). Access, retention and course choice in online, open and distance learning. *European Journal of Open, Distance and E-learning*, 7(1).

Simpson, O. (2013). Supporting students for success in online and distance education. Routledge.

Spady, W. G. (1970). Dropouts from higher education: An interdisciplinary review and synthesis. *Interchange*, 1(1), 64-85.

Stoessel, K., Ihme, T. A., Barbarino, M. -., Fisseler, B., & Stürmer, S. (2015). Sociodemographic diversity and distance education: Who drops out from academic programs and why? *Research in Higher Education,* 56(3), 228-246. doi:10.1007/s11162-014-9343-x

Strain, A. C., & D'Mello, S. K. (2015). Affect regulation during learning: The enhancing effect of cognitive reappraisal. *Applied Cognitive Psychology,* 29(1), 1-19. doi:10.1002/acp.3049

Tinto, V. (1975). Dropout from higher education: a theoretical synthesis of recent research. *Review of Educational Research*, 1975, 45, 89-125.

Woodley, A., & Simpson, O. (2014). The elephant in the room. *Online distance education: Towards a research agenda*, 459-485.