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Self-directed learning: A fundamental competence in a rapidly changing world

Abstract

Self-directed learning is a fundamental competence for adults living in our modern world, where social contextual conditions are changing rapidly, especially in a digital age. The purpose of the present article is to review key issues concerning self-directed learning in terms of (1) what are the historical foundations of the self-directed learning concept?; (2) who may benefit from self-directed learning?; (3) who is likely to carry it out?; and (4) what does research show regarding outcomes of the self-directed learning process? The author takes into consideration humanistic philosophy, pragmatic philosophy and constructivist epistemology, which together concern a process of learning that is individual, purposeful and developmental. Potentially everyone can benefit from self-directed learning competence, but both societal and individual factors may influence whether self-directed learning is likely to be carried out. The author discusses a number of empirical studies that examine outcomes of the self-directed learning process in informal/non-formal online contexts and in formal educational settings. Research findings highlight the importance of realising the opportunity to foster learners' self-directed learning competence in formal educational settings.

Keywords

review; informal adult learning; formal education and teaching; constructivism; pragmatism; humanism

Self-directed learning

Self-directed learning is a process in which a learner assumes responsibility to control their learning objectives and means in order to meet their personal goals or the perceived demands of their individual context. A salient feature of this process is that a learner's learning means and objectives are highly individual; they are differentiated in accordance with their life situation. The learner(s) themselves represent a central and salient feature of their context.

The ability to successfully and efficiently undertake self-directed learning has been positioned as a fundamental competence for adults living in our modern world, where social contextual conditions are changing rapidly (e.g. Morris 2019a, 2019b). Thus, fostering self-directed learning competence could be placed as a foremost goal within many formal educational settings.

The present article addresses, in part, a concern highlighted by Mari Murtonen et al. (2017) in a recent review of learning outcomes studies, which identified that learning processes that are grounded in *behaviourism* [1] are still broadly evident in a range of educational contexts globally (58 out of the 90 articles they reviewed were from Europe/North America). Indeed, Murtonen et al. concluded that only a minority of studies (8 %) were "critical towards the behaviourist meaning of learning outcomes" (ibid., p. 114).

A key problem of promoting educational processes that support behaviourist learning theory in our modern world is that behaviourist forms of learning go hand in hand with a teacher-directed learning process (Morris 2019a). A potential consequence of such

[1] In a nutshell, behaviourism is a theory of human learning. A learning process regarded through a behaviourist lens is characterised by predictable, measurable and pre-definable learning outcomes for all learners (Murtonen et al. 2017). From a behaviourist perspective, the ultimate learning objective of a learning process is to control learners' behaviour – to shape their growth in a particular direction (Bruner 1966; Skinner 1987 [1971]; Thorndike 1898; Watson 1913). Thus, the process benefits from learners acting meekly and uncritically rather than actively or judgmentally (Dewey 2013 [1916]).

educational processes is that learners may become accustomed to habitually reinforcing (repeating) patterns of perceiving, thinking, judging, feeling and acting – thus perpetuating behaviour that may be rather inflexible – where the person is failing to see the need to adapt to social contextual changes. The result is a lack of motivation for self-directed learning.

By contrast, self-directed learning, a process underpinned by *constructivism*,[2] has been identified as a crucial competence for preparing persons for adult life, empowering them to adapt to fluid and complex social contextual changes (e.g. Boyer et al. 2014; Kranzow and Hyland 2016).

The construct of self-directed learning has multiple dimensions (see. Beckers et al. 2016). In this regard, Adam Sawatsky et al. (2017) discuss that scholarly conceptualisations commonly emphasise one or more of three dimensions: (1) the process of learning (the management of learning tasks); (2) personality characteristics of the learner; and (3) factors within the learner's context that influence the possibility and likeliness for learners to undertake self-directed learning. Moreover, some scholarly work on self-directed learning has highlighted the need to consider a fourth dimension, which concerns the cognitive aspect of self-directed learning, namely how knowledge is construed during the learning process (e.g. Morris 2019a; Garrison 1997).

Given that fostering self-directed learning competence has become prioritised in some, but not all, formal education settings, the discussion presented in this article is intended to assist a broad range of educational stakeholders including educators, curriculum developers,

[2] Constructivism also represents a theoretical approach to understanding the nature of knowledge. It refers to a learner's experience of discovering how elements of knowledge are "constructed" and how they are connected to other elements. A learning process regarded through a constructivist lens concerns learning in which an inquiry project drives the learning process, where active and judgemental (critical) thinking is fundamental in facilitating successful learning: a process that represents learners solving or resolving authentic real-world based problems (Jonassen 1999; Morris 2019a).

managers and government policy-makers, but also personnel concerned with human resource development.

The purpose of the present article is to review scholarly research on and key issues concerning self-directed learning in terms of

(1) what are the historical foundations of the self-directed learning concept?;
(2) who may benefit from self-directed learning?;
(3) who is likely to carry it out?; and
(4) what does research show regarding outcomes of the self-directed learning process?

In the forthcoming sections these questions are addressed and afterwards further research directions are outlined.

The historical foundations of the self-directed learning concept

The concept of self-directed learning grew out of popular scholarly works published in North America during the 1960s and 1970s (e.g. Knowles 1970, 1975; Rogers 1969; Tough 1971). An attempt to summarise the key foundational positions of self-directed learning is shown in Figure 1, which highlights that the concept is grounded in *humanistic philosophy, pragmatic*

philosophy[3] and *constructivist epistemology*,[4] which together represents a process of learning that is individual, purposeful and developmental. These foundational positions of self-directed learning are now discussed in further detail.

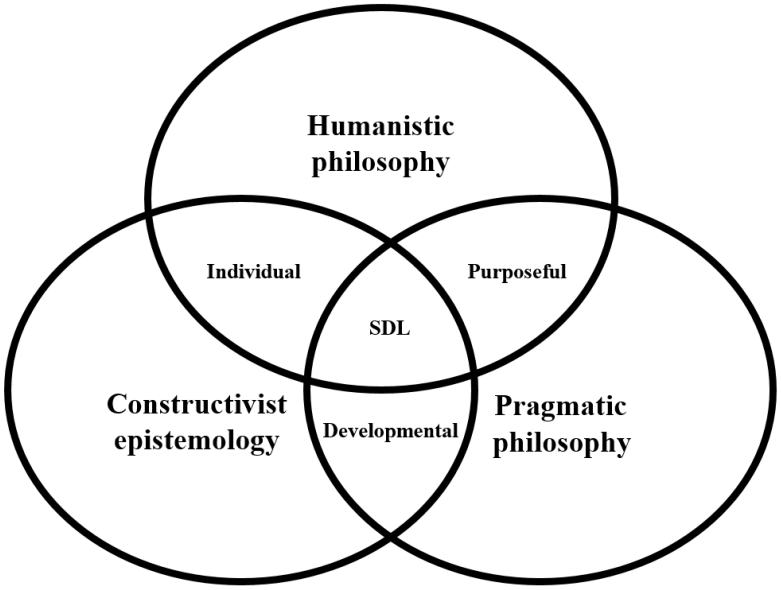

Figure 1 Foundational positions of self-directed learning (SDL)

Early scholarly work in the field of self-directed learning included the scholarship of Canadian educator and researcher Allen Tough, who became fascinated with understanding the nature of adult learning, especially with *informal* adult learning,[5] which is often a self-directed process. In 1971, through intensive and highly structured interviews with 66 Canadian adults

[3] Humanistic philosophy in an educational context concerns a developmental process of learning in which emphasis is placed on facilitating desirable and responsible personal learner growth towards learner self-actualisation (Elias and Merriam 1995; Groen and Kawalilak 2014). Pragmatic philosophy concerns the importance of testing theoretical concepts in real-world contexts to assess their effectiveness, which is viewed as necessary to secure deep understanding (see Morris 2019c for a further discussion of experiential learning theory, which is founded on pragmatism).

[4] *Epistemology* refers to the theory of knowledge (see footnote 2 above for an explanation of constructivism).

[5] According to the Council of Europe, "*informal learning* takes place outside schools and colleges and arises from the learner's involvement in activities that are not undertaken with a learning purpose in mind. Informal learning is involuntary and an inescapable part of daily life; for that reason, it is sometimes called experiential learning." (CoE n.d., para. 3).

concerning their habitual learning behaviour, Tough identified that it was common for adults to undertake self-taught "projects" of learning outside the walls of formal education and without a teacher. He found that adults undertook a median of eight learning projects per year, "involving eight distinct areas of knowledge and skill" (Tough 1971, p. 1), which represented on average 864 hours of learning per year. He defined a learning project as a "major, highly deliberate effort to gain certain knowledge and skill (or to change in some other way)" (ibid.).

Tough's empirical work highlighted the *pragmatic* nature of self-directed learning (see Figure 1). It is pragmatic in the sense that adults often initiate learning in order to find solutions to real-world problems that are situated within their personal context. Tough concluded that "[m]any learning projects are initiated for highly practical reasons: to make a good decision, build something, or carry out some task related to one's job, home, family, sport, or hobby" (ibid., p. 1) and "[a] great many learning projects are related to the person's job or occupation" (ibid., p. 35). Thus, Tough's work identified that a good portion of measurable/explicit adult learning is self-directed – *purposeful* for the learner (see Figure 1) – driven by life-centred problems.

Clearly, the nature of adult learning has changed significantly since Tough conducted his studies, especially due to digitisation (e.g. Rohs and Ganz 2015; Schmidt-Hertha and Rohs 2018). Moreover, a salient limitation of Tough's work was that he did not consider the quality of self-directed learning outcomes. This limitation has implications because adults who undertake self-directed learning are not necessarily competent self-directed learners: it is possible that their learning outcomes are not efficient or successful in achieving their learning objectives.

Humanistic philosophy

One key humanistic assumption of self-directed learning theory is that learning objectives are suitable for personal growth – i.e. a *developmental* process (see Figure 1). This developmental process represents learners' desirable and responsible growth when considering themselves and others, and regards learning as a vehicle for personal development (see Groen and Kawalilak 2014).

Humanistic philosophical assumptions include that learners are autonomous and capable of smart decision-making; have a sense of responsibility to themselves and others; are inherently good-natured; possess an urge towards self-actualisation; and have a unique but unlimited potential for growth determined by the learner's self-concept and individual understanding of the world (Elias and Merriam 1995; Leach 2018).

In 1969, American psychologist Carl Rogers published an influential book titled *Freedom to Learn* (Rogers 1969). Rogers, considered a founder of humanistic psychology, contended that in order to prepare persons to deal with the challenges of living in societies in which conditions are rapidly changing self-directed learning is the most important competence to foster in formal educational settings. In this book, Rogers did not present any concrete empirical evidence, but offered his ideas/guidelines about how self-directed learning may be facilitated in formal educational situations, including (1) setting the initial mood or climate of the experience; (2) enabling a collaborative setting of learning objectives with learners; (3) providing access to the widest possible range of resources for learning; (4) welcoming all opinions and attitudes towards the content in an unbiased way; (5) working towards a share

of control of directing the means and objectives of learning between teacher and learner(s); and (6) not imposing how students choose to construct meaning.

A key distinction of Rogers's conceptualisation of self-directed learning and its facilitation concerns the cognitive aspect of self-directed learning: highlighting the importance of enabling learners to take on responsibility for meaning-making. What may seem somewhat paradoxical is that self-directed learning in formal educational settings, and perhaps also in informal and non-formal learning settings, is often a collaborative effort (see Garrison 1997). Importantly, what differentiates the self-directed learning process is that the learner is empowered to take personal responsibility to *choose* what and how they use information in the process of meaning-making.

Moreover, recent scholarship has highlighted that self-directed learning does not occur in a social or contextual vacuum. For instance, Charlene Tan proposes that competent self-directed learning is ultimately underpinned by a "shared moral vision" (Tan 2017, p. 250) of the "individual" and the "collective" (ibid., p. 251). Thus, she highlights the importance of the need for learners to balance their personal goals with societal needs. Furthermore, social and contextual circumstances are also relevant in interpreting self-directed learning as an *individual* process (see Figure 1). Therefore, the learner's social context should be considered in order to gain a full understanding of the nature of an individual's process of self-directed learning.

Pragmatic philosophy

Another influential scholar on self-directed learning theory was Malcolm Knowles who, like Allen Tough, was supervised by Cyril Houle during his doctoral work. Inspired by Rogers's ideas (Knowles 2001), Knowles spent his career advocating the facilitation of self-directed learning in higher education settings. His influential work (Knowles 1970, 1975, 1980; and Henschke 2016 for a review) on self-directed learning emphasised the *process* dimension of self-directed learning, which refers to learner control of the learning means and objectives – the externally observable management of learning tasks (see Brookfield 1986; Gibbons 2002; Grow 1991; Mocker and Spear 1982). Knowles and other scholars pointed out that perhaps the meaning of self-directed learning becomes clearer when the learning process is contrasted with and compared to teacher-directed learning, in which an educator directs and controls the learning means and objectives (see Arnold 2015; and Morris 2018a for a review) – a process rather underlined by behaviourist learning theory (see Murtonen et al. 2017).

Knowles (2001) also acknowledged that he became excited about adult education from reading the work of Eduard Lindeman, *The Meaning of Adult Education* (Lindeman 1926), with whom he had worked with early in his career at the National Youth Administration (NYA) in the United States. Indeed, it is possible to trace much of Knowles's ideas on the principles of adult learning – which he named *andragogy* – to Lindeman's work (1926), including that (1) adults have a deep psychological need for self-direction; (2) adult learning is individual – life-centred – and individuality increases with age; (3) experience is the richest adult learning resource; and (4) adults are motivated to learn when learning is connected to their personal needs and interests.

With reference to the ideas of American philosopher and educational reformer John Dewey (2010 [1915/1902]) and his philosophy of pragmatism (see Dewey 1908), Lindeman (1926) proposed a pragmatic approach, or "situation approach" (ibid., p. 193) to adult learning. It involves adult learners asking four questions: "(1) What situation have we here?; (2) What sort of problem does it show?; (3) What new information does it involve?; [and] (4) What action will set us on towards a solution?" (ibid.). Thus, he emphasised the importance of adult learners considering the contextual conditions of their situation in the process of finding fitting and purposeful solutions to their individual life-centred problems.

Constructivist epistemology

The pragmatic dimension of adult learning supports its underlying constructivist epistemological foundations. Constructivists view learning as an individual, interpretive and active process of meaning-making (Merriam et al. 2007) – a learning process that is personal and individual (see Figure 1). Indeed, constructivist learning environments emphasise the importance of engaging learners in solving authentic real-world problems (see Jonassen 1999).

Nonetheless, what is intriguing about early conceptualisations of facilitating self-directed learning in formal educational settings, such as those of Knowles and Rogers, is that while they encompassed humanistic assumptions and constructivist epistemology, in a seemingly piecemeal fashion they did not emphasise the pragmatic aspect of the self-directed learning process. Intimately linked to a key purpose of self-directed learning, this is the aspect concerned with solving or resolving problems in the context of an adult's life. However, a good

portion of self-directed learning may be undertaken in order to effectively and efficiently solve or resolve real-world problems that an adult may face during their life course.

Who may benefit from self-directed learning?

In short, potentially everyone can benefit from competent self-directed learning. As a fundamental competence for preparing persons for adult life, self-directed learning empowers adults to adapt to fluid and complex social contextual changes – rendering it an essential competence for living and working successfully in our modern world. Potential key benefits of self-directed learning competence include:

- avoidance of knowledge and skill obsolescence, which is especially important for individuals in complex careers (e.g. Dunlap and Grabinger 2003; Morrison and Premkumar 2014);
- enabling individuals to "upskill" in the event of changes in economic conditions, providing the person a certain protection against long-term unemployment (e.g. Barnes 2016);
- empowering individuals to take emancipatory action if/when faced with oppressive situations (e.g. Bagnall and Hodge 2018);
- facilitating learners' progression towards self-actualisation (e.g. Arnold 2017); and
- nurturing long-term career success (e.g. Seibert et al. 2001).

In sum, self-directed learning could be conceptualised as a means or empowerment to change – change that is purposeful, individual and developmental (see Figure 1). Self-directed learning represents a competence that is especially important for living and working successfully in our modern world; affording adults a heightened ability to *adapt* to changing social contextual conditions (e.g. Jossberger et al. 2010; Ma et al. 2018). Stefanie Boyer et al. (2014) argue that self-directed learning competence offers "great promise" (ibid., p. 20) in preparing adults for their working life.

Indeed, *adaptivity* has recently been labelled as the *conditio sine qua non* of professional expertise (Ward et al. 2018). Defined as "the ability to employ multiple ways to succeed and the capacity to move seamlessly among them" (Hoffman et al. 2014, pp. 51–52), adaptivity has been directly correlated with long-term career success (e.g. Seibert et al. 2001). Moreover, many scholars have identified adaptivity as being crucial in many professional fields, especially in disciplines in which working conditions are rapidly changing, such as in medicine, computer science, engineering, nursing, psychology, and business management (e.g. Davis 2012; Duffy and Bowe 2010; Ma et al. 2018). Given that self-directed learning competence may enable an adult to adapt to changing conditions, it is likely to be very important for many adults living in our modern world. The next section addresses the question of who is likely to carry out self-directed learning.

Who is likely to carry it out?

There are both societal and individual differences that are likely to influence whether self-directed learning is carried out, and it seems important to consider both aspects (central to

some theoretical models of self-directed learning; e.g. Hiemstra and Brockett 2012). With regard to societal factors, Sharan Merriam (2018) argues that the contextual factors within a society at a particular point in time may determine to a large extent the means and objectives of learning in a given learning situation. When considering the process of adult learning from this perspective, it seems essential to take into account that the contextual factors which potentially modulate the possibility for self-directed learning are likely to be unique to the circumstances of the educational event.

In a recent systemic study of young adults undertaking a variety of formal vocational qualifications in England within Further Education[6] colleges (Morris 2018b), I concluded that the extent to which learners are offered control over their learning means and objectives varied strongly across institutions and was likely to depend upon a multitude of contextual factors potentially modulating the possibility for self-directed learning. Examples of such factors include the teacher (e.g. teachers' perspectives towards the teaching and learning process and towards self-directed learning, and their competence to facilitate self-directed learning), the immediate teaching team, management, parents and support staff, curriculum offering and demands, and social norms. Conceivably, because of their ability to take the control of learning means and objectives away from the learner, the teacher (or, for example, a parent in an informal learning setting), inevitably represents an important contextual factor that may strongly influence the possibility and likelihood of self-directed learning.

For instance, in a recent empirical study, Nurfaradilla Nasri (2017) investigated the perspectives of Malaysian higher education teachers (17 females, 13 males; all PhD holders)

[6] Further Education (FE) refers to any study after secondary education that is not part of higher education (i.e. not part of an undergraduate or graduate degree). In England, overwhelmingly the most common qualifications undertaken in Further Education colleges are various vocational education and training certificates by 16- to 18-year old learners (see Morris 2018b).

towards facilitating self-directed learning. The purpose of her study was to investigate how teacher educators (1) view their role as adult educators in the context of self-directed learning; and (2) empower their students to take responsibility for their learning. Based on her findings, the author concluded that not all educators had accepted the idea of taking on the role of a learning facilitator, and the majority of educators were reluctant to move away from teacher-directed learning, including their traditional teacher authority position and role as a knowledge expert.

In addition, characteristics of learners are likely to have a powerful influence on their tendency and propensity towards self-directed learning (e.g. Alharbi 2018; Barry and Egan 2018). Recent empirical studies have for instance reported strong correlations between learner self-directedness and four personality traits: conscientiousness, openness (the first two of the *Big Five personality traits*),[7] optimism and work drive (two *narrow traits*; Kirwan et al. 2010, 2014; Lounsbury et al. 2009; Major et al. 2006).[8] However, such correlations need to be confirmed by further studies, as some differences were reported between studies.

Jeral Kirwan et al. (2014) also mention that several empirical measures have been developed to examine different dimensions of self-direction in learning, which include psychological factors such as the Oddi Continuing Learning Inventory (Oddi 1986), the Self-Directed Learning Readiness Scale (Guglielmino 1978), and the Personal Responsibility

[7] "Numerous studies have verified the factor structure and construct validity of the Big Five constructs (Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism; Costa and McCrae, 1994). The five-factor model suggests that there are five independent factors of personality most commonly labeled: Openness, Conscientiousness, Extroversion, Agreeableness, and Neuroticism (often referred to by the acronym OCEAN)" (Kirwan et al. 2014, p. 3).

[8] Narrow traits are defined as "either subscales of the Big Five or as traits not encompassed by the Big Five model" (Kirwan et al. 2010, p. 22), such as Sense of Identity, Optimism, Tough-Mindedness and Work Drive (see Kirwan et al. 2010).

Orientation to Self-Direction in Learning Scale (Stockdale and Brockett 2011).[9] Historical conceptualisations of "highly" self-directed learners, on which popular measurement instruments of readiness for self-directed learning are based (see Merriam et al. 2007), assume that adults who commonly undertake self-directed learning enjoy learning; exhibit initiative, independence and persistence in learning; accept learning responsibility; view problems as challenges; and are capable of self-discipline. They have strong learning desire and skills, including the ability to plan and pace learning; they are self-confident; tend to be goal-orientated; and have a high degree of curiosity, proactive drive, cognitive openness and commitment to learning (Guglielmino 1978; Oddi 1986).

While Kirwan et al. (2014) point out that previous studies have shown that many psychological variables are directly related to learner self-directedness, few studies have explored learner self-direction specifically as a personality trait. In their study, Kirwan et al. used correlation and multiple regression analysis (*n*=2,102; 70 % female; undergraduate psychology students; 79 % freshmen; archival data) to examine the unique individual relationship between Big Five and narrow personality traits and learner self-direction. The analysis of their data revealed five significant correlations between specific traits and learner self-direction. The correlation coefficients for work drive (0.310) and openness (0.207) were significantly higher than all other measures, suggesting that these personality traits are particularly important for determining "highly" self-directed learners. However, their study

[9] The *Oddi Continuing Learning Inventory* (OCLI) is a 24-item instrument developed by Lorys Oddi to identify self-directed continuing learners by considering their personality characteristics. The *Self-Directed Learning Readiness Scale* (SDLRS) "is a self-report questionnaire with Likert-type items developed by Dr. Lucy M. Guglielmino in 1977. It is designed to measure the complex of attitudes, skills, and characteristics that comprise an individual's current level of readiness to manage his or her own learning" (http://www.lpasdlrs.com/ [accessed 13 June 2019]). The *Personal Responsibility Orientation to Self-Direction in Learning Scale* (PRO-SDLS) aims to "measure self-directedness in learning among college students based on an operationalisation of the personal responsibility orientation (PRO) model of self-direction in learning" (Stockdale and Brockett 2011, p. 161).

was limited to a single large public university, which does not make their findings necessarily generalisable to other time periods, geographic areas and types of universities. Moreover, the majority of study participants were lower-level students and the study was cross-sectional. Conceivably, a longitudinal study might give a better picture of the stability of the relationship between personality traits and learner self-direction over time.

What does research show regarding outcomes of the self-directed learning process?

Recent studies on self-directed learning have focused on examining (1) self-directed learning in informal/non-formal online contexts; and (2) the facilitation of self-directed learning in formal educational settings. The next two sections discuss empirical research findings emerging from these two lines of investigation.

Informal/non-formal online self-directed learning

In a quest to understand how the nature of self-directed learning has changed in informal or non-formal settings in our modern world, a number of recent studies highlight the need to study self-directed learning in informal/non-formal, online, 21st-century settings. Surprisingly, Carl Bonk et al. (2015) point out that this is a fast-growing research field, but identify that to date there is a dearth of research that details the nature and patterns of adult learning in informal or non-formal contexts.

Recently, Pamela Beach (2017) conducted an empirical study that involved an in-depth investigation into the self-directed learning of Canadian primary school teachers (*n*=15; with

five and nine years of teaching experience) in an online environment. The teachers completed a retrospective think-aloud task with screen recording technology that was used to capture their cognitive processes as they used a professional development website, followed by a semi-structured interview. All participants reported feeling very or somewhat comfortable using the Internet for professional purposes. Beach presented a model which intended to capture how these primary school teachers used such an online resource and reported a number of conditions (perception of professional learning, student needs and instructional goals, and motivating factors) affecting teachers' website navigation. However, especially given the very individualised nature of one's learning process – a salient feature of self-directed learning (see Figure 1) – the findings of this report were limited in terms of external validity. Also, because participants were asked to complete a task which they habitually may not engage in, caution in interpreting the findings should perhaps be made with regard to whether these patterns of learning reflected participants' habitual patterns of self-directed learning.

Another empirical study that focused on teachers' (*n*=309) self-directed learning processes was conducted by Monika Louws et al. (2017), which identified that visiting educational sites on the Internet was one key means (preferred learning activity) of continual teacher training, development (see Figure 1) and keeping up-to-date (alongside teachers participating in conferences, training courses and reading paper-based materials). Their sample of participants were selected from eleven Dutch secondary schools. They were asked to fill in a questionnaire regarding their preferred learning domains ("what"), their preferred learning activities ("how"), and their reasons to learn about a selection of learning domains ("why"). The authors discussed how self-directed learning was a normal and expected part of

professional development in the Netherlands, which may be unlike other contexts where professional development is more externally directed. Using regression analysis, Louws et al. reported that learners' topics of self-directed learning changed depending on the length of their teaching experience. For instance, teachers' learning about domain-specific subject content appeared to decline as they became more experienced, while, in contrast, time spent learning about mentoring novice teachers increased with more years of teaching experience. There were several limitations of the study, including a relatively small response rate and an under-representation of experienced teachers.

Moreover, there has been a recent growth in interest in and scholarship on self-directed learning within the context of the modern phenomenon of massive open online courses (MOOCs). As Bonk et al. (2015) note, in this age of information there is indeed a greater emphasis on self-directed learning, which substantiates a perception of self-directed learning as a fundamental competence for all adults. Bonk et al. examined the online learning pursuits of participants (*n*=613 completed the full survey; of whom 76 % were male; 44 % North American, 23 % Asian, 14 % European, and 10 % South American) of a MOOC hosted by a free online learning platform called CourseSites furnished by a course management provider called Blackboard. They conducted a qualitative online survey concerning (1) learning preferences; (2) goals and motivations; (3) achievements; (4) obstacles and challenges; and (5) possibilities for life change.

Bonk et al. (2015) found that in order to meet their self-directed learning needs, adult learners use a wide range of devices and places to learn. Participants named curiosity, interest and internal need for self-improvement as key motivational factors, especially in order to gain specific skills and general skills to help them to advance in their careers. Factors that led to

success or personal change included the freedom to learn, an abundance of resources, as well as choice, control and fun. Key obstacles participants reported were lack of time, lack of high-quality open resources and the cost of partaking in the education. Perhaps an especially important finding of the study was that some participants gave accounts of how the self-directed learning process facilitated positive transformational and purposeful life change (see Figure 1). This finding demonstrates the kind of benefit learners might gain from self-directed learning, implying the potential for such learning processes to reach people situated in contexts in which traditional schooling is not available (e.g. in prisons, hospitals or in underdeveloped countries with few or no higher education opportunities).

However, more recently Bonk et al. (2018) identified that perhaps one potential disadvantage of online learning, common and well-documented among learners who have enrolled in a MOOC, concerns a lack of learner support. In particular, while many platforms encourage self- and/or peer-feedback, it is often the case that learners do not receive personal feedback from an instructor or expert in the learning domain. This remains a challenge due to the cost of providing human support to a large number of learners.

At first glance, the possibility of gaining potentially life-changing education through MOOCs seems an exciting opportunity; and this remains an important future research topic for self-directed learning. However, it is imperative to consider the very high proportion of learners who attempt or start a MOOC but then drop out and do not complete the course. Daniel Onah et al. (2014) have estimated that the completion rate for most MOOC courses is below 13 %.

In an empirical study, focusing on adult online learners in Germany, Matthias Rohs and Mario Ganz (2015) concluded that the majority of individuals who completed MOOCs had

previously completed a higher education degree. Referring to *knowledge gap theory,*[10] they suggest that MOOCs may actually present a danger, with the potential of unintentionally helping to further expand existing inequalities in education. In the title of their article, "MOOCs and the claim of education for all: A disillusion by empirical data" the authors actually refer to a "disillusion". One plausible explanation for this, not identified by the authors, and an important research topic for further studies, concerns learners' self-directed learning competence. Specifically, it seems very likely that completing a MOOC in fact necessitates (existing/formerly acquired) competence in self-directed learning. Therefore, the argument about MOOCs replacing formal education (see Bonk et al. 2015) may be redundant if a course of formal education is required to foster students' self-directed learning competence. In sum, fostering self-directed learning competence in formal educational settings may be necessary and prerequisite to enable competent self-directed learning in informal or non-formal learning contexts.

Self-directed learning in formal education

Formal education is an opportunity to foster learners' self-directed learning competence. One distinctive advantage of learners learning in a formal educational setting is, perhaps, access to an expert – the educator – who may represent an important learning resource, but could also function as a facilitator who assists a learner in progressively building up self-directed learning

[10] Knowledge gap theory concerns "the increase of information in society [that] leads to differing reception dependent on socioeconomic status" (Rohs and Ganz 2015, p. 3, in reference to the work of Tichenor et al. 1970).

competence, thus enabling her/him to assume control of directing their own individual learning process.

Indeed, already in 1972, Michael G. Moore pointed out that "[m]ost educational theories stipulate the desirability of learners' acquiring sufficient skill in preparation, execution, and evaluation to conduct their own learning" (Moore 1972, p. 80). Nonetheless, there is, perhaps alarmingly, a dire scarcity of studies reporting on educational systems that are specifically designed to foster learners' self-directed learning competence.

However, in some educational contexts, especially in vocational education, the importance of facilitating self-directed learning and fostering self-directed learning competence has been recognised and classified as a priority educational goal. Nonetheless, studies investigating the process of facilitating self-directed learning in formal educational settings have reported on the difficulties of doing so. Different research groups have focused on distinctive educational potentialities for supporting the facilitation of self-directed learning in formal educational contexts, such as the use of, for example, development-portfolios, e-portfolios or workplace simulations.

In a recent empirical study, Jorrick Beckers et al. (2018) highlighted that while one of the essential elements of supporting the facilitation of self-directed learning is assistance, especially feedback given by educators, this requires much time and energy on the part of the educator. This mixed-method study examined the effectiveness of employing e-portfolios in Dutch vocational education and training (32 males, 15 females; mean age = 17.3 years, SD = 1.5). The findings of Beckers et al. (2018) suggest that teacher facilitation of self-directed learning is like "walking a tightrope": too much or too little support can significantly detract from the effectiveness of the self-directed learning process. This insight highlights the need

for further studies to improve our understanding of the educator competences required to successfully facilitate self-directed learning among a class of learners who are likely to have different degrees of competence, preference and tendency towards self-directed learning.

Approaching "learning in workplace simulations in vocational education [from] a student perspective", Helen Jossberger et al. (2017) discuss the potential for workplace simulations to facilitate self-directed learning in formal educational settings. They explain that in the Netherlands, adult vocational education and training has shifted away from theoretical domain-specific knowledge taught in classrooms because this presented a problem of knowledge and skill transfer. However, the authors conclude that while workplace simulations have a good potential to address this problem and enable the facilitation of self-directed learning, the didactical understanding of conducting workplace simulations has not yet been properly worked out.

Nonetheless, novel didactical principles that may be suitable for fostering learner adaptivity and facilitating self-directed learning in formal educational settings are beginning to be developed by a small number of research groups (e.g. Ward et al. 2018). Nevertheless, Paul Ward et al. (2018) discuss that there is a scarcity of comprehensive studies that examine the effectiveness of such alternative didactical principles; this gap thus represents another important topic for further research. As I have noted elsewhere (Morris 2018b), it is possible and probable that specific vocations or forms of adult learning demand specific and tailored didactical principles or differential amounts of support from an educator.

In another Dutch study, Wendy Kicken et al. (2009) examined the effectiveness of young adult learners' in the context of vocational education in the Netherlands that demands self-directed learning. In reference to Dutch secondary vocational education, the authors explain

that many institutions have introduced “on-demand” education because it is nowadays acknowledged that students should be given more control of and responsibility for their own learning. Their study involved students (42 female, 1 male; mean age = 18 years, SD = 1.2) in their first year of a three-year hairdressing programme and was designed to investigate whether supervision meetings, in which students received specific advice on how to use a development portfolio, helped them to develop their self-directed learning skills and improve their learning outcomes in the domain. Participants were divided into two groups: one group of learners were not offered supervision meetings; the other group of learners attended supervision meetings in which expert (educator) advice and guidance was provided regarding their process of self-directed learning. Students in the advice group (*n*=21) formulated better learning needs, selected more suitable learning tasks, completed more practical assignments, and acquired more certificates than students in the feedback-only group (*n*=22). Overall, however, Kicken et al. found that many students did not make sufficient progress in these self-directed learning programmes. The authors suggest that many learners would benefit from expert support, especially in nurturing the skills necessary for self-directed learning over some period of time, which includes fostering the skills of self-regulation (see Jones 2017; Pintrich 2004; Zimmerman 1990 for a review of the *self-regulation* concept and wider discussion), because throughout their formal schooling up until this educational stage learners had got used to a teacher-directed learning process.

When examining the relative success or failure of these kinds of formal education programmes (which might be described as “novel”), it should be considered that many studies report on the effectiveness of a *short* course that demands self-directed learning. Most commonly, such short courses last one educational term/semester, or at most one academic

year. The findings of recent studies (reviewed above) on attempts to facilitate self-directed learning in formal education concur with historical reports such as Knowles's influential book *Self-directed learning: A guide for learners and teachers*, where he argued that self-directed learning is "a basic human competence – the ability to learn on one's own" (Knowles 1975, p. 17). At the same time, however, he also acknowledged in this book that it is a mistake to assume that adults automatically have the necessary skills to be effective self-directed learners. Reflecting on his attempts to facilitate self-directed learning in a North American higher education setting, he concluded that the process can be "a very risky venture" (ibid., p. 44) and "[s]tudents entering into these programs without having learned the skills of self-directed inquiry will experience anxiety, frustration, and often failure, and so will their teachers" (ibid., p. 15).

Thus, although fostering self-directed learning competence may be identified and prioritised as a foremost goal in a given formal educational context, a potential problem is that when an educational programme is trialed in which self-directed learning is stipulated, if learners do not progress satisfactorily in their learning, educational programmes may, conceivably, fall back to more traditional teacher-directed models. At the same time, further studies should investigate other barriers to facilitating self-directed learning, such as the potential financial issues that may arise, including (as mentioned earlier) the cost of providing support and feedback in online informal and non-formal learning settings.

But, given the importance of fostering and facilitating self-directed learning in formal educational settings, as outlined in this present article, it might be concluded that this should *not* be a risky or a trial-and-error venture. Indeed, some scholars argue that competency development is systemic in nature – dependent upon a person's experiences from birth –

rather than the result of assisted acquisition in the space of just one single schooling semester, term or year.

Indeed, Rolf Arnold's (2017; reviewed in Morris 2019b) *systemic-constructivist* [11] perspective on adult learning highlights that an adult's understanding of the world and habitual learning processes are systemically grounded in their experiences since birth. Robert Kegan's (2009) *constructive-developmental* theory[12] is complementary to this perspective and highlights that over time the ways we understand and construct experience can become more complex. Thus, from a systemic-constructivist or constructive-developmental perspective, fostering learners' self-directed learning competence should be considered as a holistic educational process of competence development (see Kranzow and Hyland 2016). That, perhaps, requires an educational system in which learners are exposed to practice of a self-directed learning process and given the appropriate support for acquiring the necessary skills to engage in the self-directed learning inquiry process over a significant period of time (e.g. from the early years of schooling through to adulthood).

[11] Systemic-constructivism, which builds on the concept of constructivism (see footnote 2 above) concerns a theoretical perspective on learning and the process of meaning-making (knowledge construction), which posits that a "learner's personal understanding of the world and how they interpret new experiences, and make meaning of the world in which they live, is determined by their unique set of experiences and interpretations of themselves and their world since birth. Meaning-making is always an individual and personal, unique, process. However, in addition, a key consideration is that experience and learning never occurs in a social or contextual vacuum" (Morris 2019b, p. 304).

[12] Rather than being concerned with what information we have learned (what we know), constructive-developmental theory highlights that appreciating our way of knowing is essential. Kegan's (2009) constructive-developmental theory proposes that over time the ways in which we understand and construct experience can become more complex.

Conclusions and further research directions

Fostering self-directed learning competence in formal educational settings seems fundamental for empowering learners to deal with a world that is becoming ever more complex and changeable, where much benefit might be gained from adapting behaviour to new circumstances. The purpose of the present article was to review aspects of research on self-directed learning, guided by the following questions: (1) what are the historical foundations of the self-directed learning concept?; (2) who may benefit from self-directed learning?; (3) who is likely to carry it out?; and (4) what does research show regarding outcomes of the self-directed learning process?

With regard to the historical foundations of the self-directed learning concept, I have discussed in this article how the concept grew out of popular works published in North America during the 1960s and 1970s and is grounded in humanistic philosophy, pragmatic philosophy and constructivist epistemology, which together represent a process of learning that is individual, purposeful and developmental (see Figure 1).

However, scholarly works on self-directed learning do not always appreciate all of these aspects of the process. Moreover, the nature of adult learning has changed significantly over time, especially due to digitisation. In addition, historically, scholars investigating the process of self-directed learning did not consider the quality of its learning outcomes. Bearing this limitation in mind is important to avoid the assumption that all adults who undertake self-directed learning are competent self-directed learners: their learning outcomes might not prove efficient or successful in achieving their learning objectives. Therefore, it is imperative

that future research on self-directed learning includes considering the quality of learning outcomes derived from the self-directed learning process.

Another important point is that, when interpreting self-directed learning as a personal process, it is essential to remember that an individual's learning and development does not occur in a social or contextual vacuum. Further studies on self-directed learning should therefore place a central emphasis on understanding the learner's social context.

With reference to the question of who may benefit from self-directed learning, I have discussed how potentially everyone can benefit from competent self-directed learning. Self-directed learning could be conceptualised as a means, or empowerment, to change – and therefore represents a competence that is especially important for living and working successfully in our modern world.

Moreover, concerning who is likely to carry out self-directed learning I have reasoned that both societal and individual factors may influence the likelihood of a learner's engagement in self-directed learning. With regard to societal factors, the contextual factors within a society at a particular point in time may be decisive in determining the means and objectives of learning (e.g. teachers' perspectives, institutional climate, educational policy and societal norms). At the same time, learners' individual characteristics are also likely to have a powerful influence on their tendency and propensity towards self-directed learning. Some empirical studies have identified conscientiousness, openness, optimism and work drive as some of the potentially important traits that determine learner self-directedness. However, since there are some differences in findings between studies, further research is required to confirm such correlations.

Finally, in reviewing in this article what research shows regarding outcomes of the self-directed learning process, I have discussed a number of empirical studies that have examined learning outcomes of the self-directed learning process both in informal/non-formal online contexts and in formal educational settings. Aiming to understand how the nature of self-directed learning has changed in our modern world, recent scholarship has highlighted the need to study self-directed learning in informal and non-formal online 21st-century settings. This research field is growing rapidly. However, recent studies also highlight some of the challenges of online self-directed learning, suggesting there is a need to foster learner self-directed learning competence to ensure effective online self-directed learning.

While it makes a lot of sense to foster learners' self-directed learning competence in formal education settings, many studies investigating the effectiveness of such facilitation only examine a short course of self-directed learning, most commonly lasting one educational term/semester, or one academic year at most. These studies report a mixed quality of self-directed learning outcomes; a result which concurs with historical reports on facilitating self-directed learning in formal educational settings.

Longitudinal studies that examine more holistic educational solutions – targeting self-directed learning competency development over a longer period of time – are necessary to avoid a potentially recurring problem that educational programmes may fall back towards more traditional teacher-directed models when efforts towards introducing facilitation of self-directed learning in formal educational settings fail. This potential threat is alarming given the fundamental importance of self-directed learning competence for working and living in our modern world.

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