



Received: 06 April 2016
Accepted: 22 June 2016
Published: 05 July 2016

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INFORMATION & COMMUNICATIONS TECHNOLOGY IN EDUCATION | RESEARCH ARTICLE

Motivational factors in self-directed informal learning from online learning resources

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Abstract: Learning is becoming more self-directed and informal with the support of emerging technologies. A variety of online resources have promoted informal learning by allowing people to learn on demand and just when needed. It is significant to understand self-directed informal learners' motivational aspects, their learning goals, obstacles, and successes when using online resources. However, scant knowledge exists about self-directed learning factors, such as informal learners' behaviors and motivations, which would suggest guidelines for improving their learning performance. The goal of this study was to contribute to the understanding of learners' motivational factors and self-directed learning aspects of informal learning when using online learning resources. In this study, a survey of learners from various informal learning websites was conducted. Quantitative analysis including descriptive and frequency analysis regarding informal learning experiences was conducted. The results show that the main flow of self-directed informal learning through online resources: freedom and choice; control; and interest and engagement.

Subjects: Educational Research; ICT; Open & Distance Education and eLearning; Study of ODL and eLearning

Keywords: informal learning; motivation; self-directed learning; online learning resources; self-determined learning

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PUBLIC INTEREST STATEMENT

A variety of online resources have promoted non-traditional learning. Online learning resources allow people to learn on demand and just when needed. Therefore, learning is becoming more self-directed, non-tradition, and informal. It is important to understand self-directed informal learners' motivational aspects, their learning goals, obstacles, and successes when using online resources. Unfortunately, scant knowledge exists about self-directed learning factors, such as learners' motivations. This type of knowledge would suggest guidelines for improving our learning performance. The goal of this study was to contribute to the understanding of learners' motivational factors and self-directed learning aspects of informal learning when using online learning resources. The result helps us think about our current formal education environments, which might burden the student with the restricted opportunity to enjoy their own learning.

1. Introduction

Learning is becoming increasingly self-directed, open, and informal (Bonk, 2009, 2010). Learners have increasing choice over the timing, location, contents, and path of their learning. As such, it is vital to examine their learning goals, obstacles, and successes when accessing open online content in an informal manner. With the rapid development of technology, a variety of online resources have promoted informal learning by allowing people to learn on demand and just when needed. The rapid growth in number of online learning resources continues to have a profound impact on the ideas and beliefs that encompass learning. People can learn from online resources staying in various locations such as a plane, subway, or boat. It can also facilitate dynamic learning activities such as during the process of climbing a mountain, taking a vacation on a remote island, or even working in a war zone. Many people are now enrolled in virtual schools and online universities. Others just take an online class or two as an experiment. The vast majority of online learners have likely used free and open educational resources during such online classes or experiences, such as MIT Open Course Ware, Khan Academy, Open College Textbooks, TED (Song, Bonk, & Whiting, 2012). Individuals with Internet access now possess a variety of opportunities to learn anywhere that their computing devices can access learning resources. Fortunately, mobile technologies are increasingly offering such access in remote and underprivileged regions of the world (Song, Karimi, & Kim, 2015).

Despite the proliferation of using online learning resources in self-directed ways around the world, scant knowledge exists about learning-related factors, such as informal learners' behaviors and motivations, which would suggest guidelines for improving performance. Successful learners are traditionally characterized as being internally motivated (Wang & Peverly, 1986). Internally motivated learners actively process information and events, while utilizing the learning resources available to them in order to obtain new knowledge and skills in a self-directed way (Keller & Suzuki, 2004). Despite the dramatic rise in the educational uses of online resources, few studies have been conducted on the use of online resources to motivate people to informal learning (see Lucas & Moreira, 2009). Current educators do not facilitate informal learning well as emerging technologies are rapidly developed (Bull et al., 2008). Even less is known about how such individuals self-direct their learning in such environments.

The goal of this study was to contribute to the understanding of learners' motivational factors and self-directed learning aspects of informal learning when using online learning resources. In this study, a survey of 85 individuals from various informal learning websites was conducted. Quantitative analysis including descriptive and frequency analysis regarding informal learning experiences was conducted. Implications of the results are discussed in a global context.

2. Background

2.1. Informal learning and motivation

Due to the vagueness, multiple definitions and perspectives in informal learning, it is difficult to know whether such resources have made an impact in an informal or more formal way (see Song & Lee, 2014). While some researchers point to the location of learning (i.e. all learning outside the school) (e.g. Bull et al., 2008), others focus on the purposes of the learning pursuit or types of learning taking place (i.e. all learning that is part of leisure activity rather than for examination purposes) (e.g. Sefton-Green, 2004). Informal learning is also defined as "any activity involving the pursuit of understanding, knowledge or skill which occurs without the presence of externally imposed curricular criteria" (Livingstone, 2001, p. 4). Given the fact that one of the major motivational factors for learning is obtaining a degree or certification, informal learning could be an interesting phenomenon that might have a different motivational factor from formal learning (Sloep, 2012). In Lucas and Moreira's (2009) study, informal learning can be seen as "self-directed, incidental, intentional, non-intentional or social form of learning" (p. 326). Self-directed aspects might lead people to informal learning. Informal learning could be "a natural activity by a self-motivated learner" (Cook, Pachler, & Bradley, 2008, p. 4) without tutor/instructor involvement (Cook et al., 2008; Santos & Ali, 2012). Informal learning can also be characterized as learner-owned, learner-directed, independent,

non-formally timetabled learning that takes place away from formal educational contexts (Hall, 2009). Though there has not been a consensus for the definition, motivational aspects of self-directed learners were found in most of the informal learning definitions. Thus, informal learners are characterized as motivated to choose or self-direct their own learning.

Self-directed learning emphasizes the choices in one's learning path; in effect, intrinsic motivation as critical to self-directed learning (Loyens, Magda, & Rikers, 2008). Self-directed learning can be defined as "a process in which individuals take the initiative, with or without the help from others, in diagnosing their learning needs, formulating goals, identifying human and material resources, choosing and implementing appropriate learning strategies, and evaluating outcomes" (Knowles, 1975, p. 18). In self-directed learning, the learners need to be empowered to make their own learning decisions (Downes, 2010). Evidently, informal learning provides a lot more choices for learning. People might feel demotivated to learn in school because there are restrictions that might interfere with their motivation, such as demands for completing tasks without the available resources in the classroom (Wolters, 2011). As Cox (2013) claimed through his review of the technological and educational research changes over the last 40 years, students use technology outside school even more than in school, which makes informal learning equally important as formal learning in human learning and development. This is one reason why the research on motivation of self-directed informal learners is needed.

Furthermore, using emerging technologies (e.g. mobile, wireless, or ubiquitous technology) people can learn in informal and nontraditional ways anywhere and anytime (Bonk, 2009). Such opportunities are important to understand since learners often address that their informal learning activities are more motivating and engaging than formal learning (Jones, Issroff, Scanlon, Clough, & McAndrew, 2006). In effect, informal learning through online resources can change the identity of a learner because of the participatory nature of emerging technologies that have made it possible for people to learn both in and outside the classroom. As technologies transform access to and delivery of learning resources, they have significantly altered an individual's learning and academic paths (Greenhow, Robelia, & Hughes, 2009).

2.2. Online resources for self-directed learners

For creating their own knowledge, self-directed learners explore learning materials, monitor their learning, reflect on it, and self-evaluate it (McLoughlin & Lee, 2010). The availability of online learning resources gained momentum for self-directed online learners to support their knowledge building process during the last decade. People can learn through virtual school/university/online classes, and free/open educational resources. Learners can build their knowledge by participating in virtual worlds, online communities, and social media. Learning a language is possible through the Internet individually or with others around the world. In addition, online learning resources with participatory technologies have immense potential to support self-directed learning (Dunlap & Lowenthal, 2011). By focusing on the characteristics of Web 2.0, Greenhow et al. (2009) emphasize the learners' participatory aspects and creative practices of online resources that educators should consider, for example, as participating in knowledge building through collaborative wiki activities, creating and sharing learning materials, such as podcasts, videocasts, and (micro)blogs. The active, process-based, participatory, and social aspects of online learning resources could support people to be independent, self-directed learners (McLoughlin & Lee, 2010).

Though the emphasis has been on the use of online resources, not many studies were conducted to examine learners' motivational factors in online learning environments. Ardichvili, Page, and Wentling (2003) investigated the motivation and barriers to employee participation in online knowledge-sharing communities of practice at a multinational corporation. The participants considered the online community was like an encyclopedia as well as a problem-solving tool. They also viewed it as a tool for professional development and a tool for managing the work of various studies (Ardichvili et al., 2003). Still, it needs more investigation about motivation, specifically, key factors of learning in a broader online learning situations.

There are some studies on the key factors of learning using online environments. Sridharan, Deng, Kirk, and Corbitt (2010) investigated the main factors of learning through online learning resources from the learners' perception. The findings show that key factors that have an impact on the effectiveness of the online learning are: (1) management of learning resources (e.g. accessibility, adaptability, and reusability); (2) technological aspects; and (3) metadata ontologies (Sridharan et al., 2010). Though these aspects might be seen as crucial in general, their study focuses on the formal learning environment rather than informal situations. Some researchers focus on the positive aspects of emerging technologies as key factors of learning (e.g. Greenhow et al., 2009). For example, the nature of emerging technologies can help learners to develop metacognitive awareness and problem-solving skills, to have teaching experiences, and finally to be self-directed learners (Dunlap & Lowenthal, 2011). However, the learners' perspective should also be considered when addressing the use of technologies.

A wide range of online learning resources have a potential to be useful learning materials for informal self-directed learners. There are many possible achievements from using such resources. However, there are few studies that examined learners' motivation aspects in self-directed informal learning from online learning resources. Thus, this study explores motivational factors of informal learners and self-directed learning aspects of informal learning when using online learning resources.

3. Method

A self-directed online learning research team at a university located in the United States identified over 340 informal learning websites and online learning resources using diverse methods and strategies including personal knowledge, web searches, scanning books, blog posts, technical reports, and expert recommendations. The users of informal learning resources were the target subjects, and a survey was distributed through each website and personal emails. The online survey included 42 items about their informal learning experiences, including 27 closed-ended and 15 open-ended items. Respondents were allowed to check all that apply for the questions.

3.1. Participants

The researcher received 87 survey respondents; 2 of which were incompletely filled out. Of the 85 completed surveys, 60% were males and 34% were females; the remaining 6% were not specified. Participants' age range was: 13–17 (12.9%); 18–20 (2.4%); 21–30 (14.1%); 31–40 (18.8%); 41–50 (30.6%); 51–60 (17.6%); and 61–70 (3.5%). The respondents were located in Africa (2.4%), Asia (3.5%), Australia (1.2%), Europe (7.1%), Middle East (2.4%), North America (82.4%), and South America (1.2). The survey respondents came from: learning portals and open educational resources (e.g. MERLOT.org, College open textbook community, Bookboon company, eol.org; OpenCourseWare Consortium's Facebook page, Saylor.org), shared online video websites (e.g. Facebook group of History Teachers and History for Music Lovers), global education (e.g. Earth Charter; personal email), virtual education (e.g. Open High School of Utah), adventure learning (PolarTREC.org; Facebook friend and group of the educators and researchers), etc.

4. Results

4.1. Self-directed aspects

Over 90% of the respondents negatively answered to the question: "Do you typically have help or guidance from someone else when you go online to learn something new?" The participants answered that they would find learning resources from browsing on their own (85.9%), social networking sites (67.1%), friends or colleagues (65.9%).

The location of their self-directed informal learning pursuits was also inquired. The participants tended to learn informally online from home (97.6%), school (57.1%), and work (50.0%). Many were also learning during the time of traveling through a car, bus, subway, or other form of transportation (32.1%) as well as when walking or hiking (19%).

Table 1. Motivational reasons for self-directed informal learning

Responses	N*	%**
Interest in the topic	77	91.7
Curiosity	74	88.1
Need for some information	62	73.8
Choice or freedom to select the topic or resources	57	67.9
Goals for self-improvement	52	61.9
I just want to learn something new	51	60.7
Professional growth (job related)	48	57.1
Feeling of personal control over my own learning	47	56.0
Hobbies	32	38.1
The website or activity looks exciting	31	36.9
Personally felt need for new skills	27	32.1
Make a contribution to society	22	26.2
Participate in a particular activity, resource, or event	20	23.8
Total	600	714.3

*Respondents: 84. Respondents were allowed to check all that apply.

**Out of 84.

4.2. Motivation

As shown in Table 1, the main reasons for exploring learning resources were interest in the topic (91.7%), curiosity (88.1%), need for information (73.8%), freedom to select the topic (67.9%), and goals for self-improvement (61.9%).

There were a number of extrinsic influences for learning online in a self-directed way. As shown in Table 2, the external factors included academic work (58.3%), ease of access to online learning resources (58.3%), and others' recommendation (53.6%). Nearly half also indicated that the ease of technology as well as job requirements encouraged their self-directed informal online learning.

Table 2. External factors to motivate self-directed informal learning

Responses	N*	%**
Class, homework assignment, exam, academic progress, etc.	49	58.3
Ease of access to the website	49	58.3
Recommended by my friends, peers, etc.	45	53.6
Ease of use of the technology	38	45.2
Job requirements	38	45.2
Coolness of the technology	23	27.4
Recommended by my teacher, instructor, or tutor	22	26.2
Hear inspirational leaders	19	22.6
Promoted in my school or organization	16	19.0
Preparing for a standardized test or some type of performance	15	17.9
It is the "in-thing" now or constantly in the news	7	8.3
Total	321	382.1

*Respondents: 84. Respondents were allowed to check all that apply.

**Out of 84.

Table 3. Key factors leading to successful of self-directed informal learning

Responses	N*	%**
Freedom to learn	55	65.5
Fun	48	57.1
Producing or creating something	44	52.4
Abundant resources	37	44.0
Choice	37	44.0
Control over the activity or resource	34	40.5
New friends and colleagues or people in your personal network	28	33.3
Advice from others	28	33.3
Collaboration	27	32.1
Online help or support systems	22	26.2
Novelty of the technology	20	23.8
Feedback from the system or others on performance	20	23.8
Identity	9	10.7
Fantasy	4	4.8
Total	413	491.7

*Respondents: 84. Respondents were allowed to check all that apply.

**Out of 84.

4.3. Key factors and barriers

Also of interest were the factors that led to successful self-directed informal online learning. As shown in Table 3, freedom to learn (65.5%) was the most important factor of successful self-directed informal learning. The participants answered fun (57.1%), creating something (52.4%), resources abundance (44.0%), choice (44.0%), and control over the activity (40.5%). Networking with others, advice from others, online help and support, and different forms of collaboration were also deemed important to the respondents.

Of course with such success, there come many obstacles and challenges along the way. As shown in Table 4, not surprisingly, the most encountered obstacle was the lack of time (61.6%). The participants also felt that access or membership fees (53.1%), the lack of quality resources (32.1%), poor

Table 4. Obstacles and barriers to self-directed informal learning

Responses	N*	%**
Lack of time	50	61.7
Membership or technology fees or service charges	43	53.1
Lack of quality resources	26	32.1
Difficult to use the site or service	20	24.7
Lack of self-motivation or interest	16	19.8
Problems with accessing the website	16	19.8
Lack of excitement	14	17.3
Lack of support	11	13.6
Limited access to the Internet	9	11.1
Total	205	253.1

*Respondents: 81. Respondents were allowed to check all that apply.

**Out of 81.

Table 5. Achievements experienced from self-directed informal learning

Responses	N*	%**
Learned something new	79	92.9
Felt better about myself as a learner	47	55.3
Personal freedom	42	49.4
Kept up with my friends	39	45.9
Made new friends	33	38.8
Changed my beliefs about what learning is	33	38.8
Felt better about myself as a human being	32	37.6
Kept up with my family members	29	34.1
Got interested in a particular occupation or career	25	29.4
Found a possible new job or position	22	25.9
Received a certificate of completion	18	21.2
Received a high score on an online game or activity	15	17.6
Moved up at work	14	16.5
Scored higher on a standardized test or exam	8	9.4
Total	436	512.9

*Respondents: 85. Respondents were allowed to check all that apply.

**Out of 85.

usability of the informal learning resources (24.7%), and lack of self-motivation (19.8%) were also major hindrances to their online informal learning pursuits. Some even lacked an interest or excitement to engage in such activities (17.3%).

4.4. Achievements

Ultimately, it is the achievements that matter. Table 5 reveals that the respondents tended to all learn something new (92.9%). In addition, some felt better about themselves as a learner (55.3%), whereas others experienced personal freedom (49.4%). Making friends and keeping up with friends

Table 6. Satisfaction, impact on life, and life changes resulted from self-directed informal learning

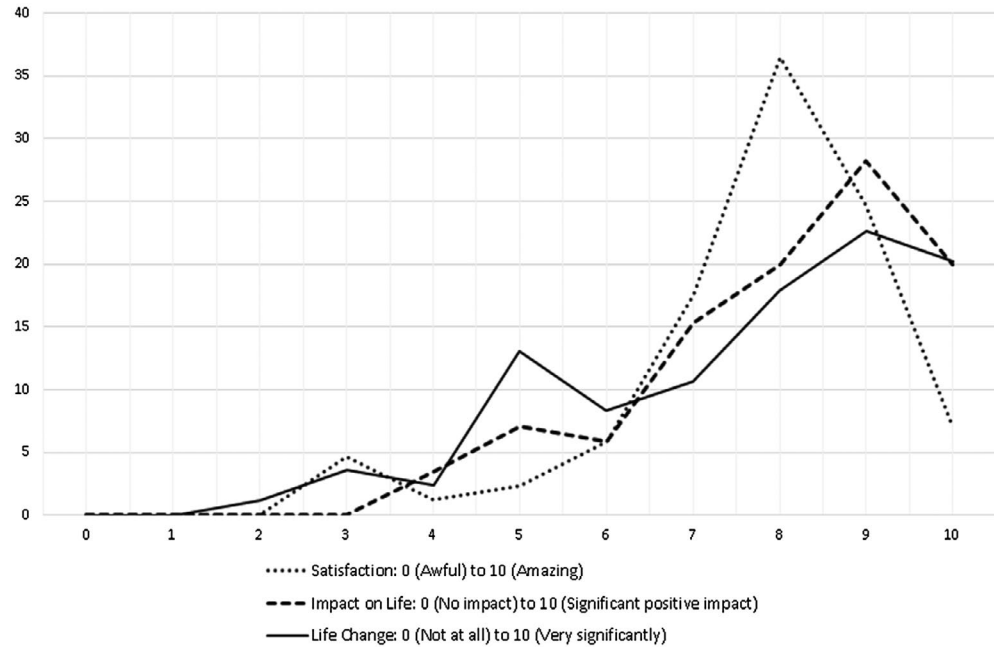
Level*	Satisfaction** (%)	Impact on life**(%)	Life changes*** (%)
0	0	0	0
1	0	0	0
2	0	0	1 (1.2%)
3	4 (4.7%)	0	3 (3.6%)
4	1 (1.2%)	3 (3.5%)	2 (2.4%)
5	2 (2.4%)	6 (7.1%)	11 (13.1%)
6	5 (5.9%)	5 (5.9%)	7 (8.3%)
7	15 (17.6%)	13 (15.3%)	9 (10.7%)
8	31 (36.5%)	17 (20%)	15 (17.9%)
9	21 (24.7%)	24 (28.2%)	19 (22.6%)
10	6 (7.1%)	17 (20%)	17 (20.2%)

*Satisfaction: 0 (Awful) to 10 (Amazing); Impact on Life: 0 (No Impact) to 10 (Significant Positive Impact); and Life Change: 0 (Not at all) to 10 (Very significantly).

**Total Respondents: 85.

***Total Respondents: 84.

Figure 1. Respondent sense of satisfaction, impact on life, and life changes from self-directed informal online learning experiences.



were also considered important achievements by around 4 in 10 respondents. A similar percentage changed their beliefs about what learning is or felt better about themselves as human beings.

The impact on people’s lives from their engagement in informal online learning was also examined. The level of the satisfaction, impact on life, and life changes resulted from respondents informal learning experience was investigated (see Figure 1 and Table 6). The questions were on a scale of 0 to 10: “[Satisfaction] How would you rate your most recent online learning exploration, experience, or activity?” was on a scale of 0 (Awful) to 10 (Amazing); “[Impact on Life] How would you rate the impact of informal online learning experiences on your life?” was on a scale of 0 (No Impact) to 10 (Significant Positive Impact); and “[Life Change] How much has your life changed because of informal online learning experiences?” was on a scale from 0 (Not at all) to 10 (Very significantly).

Overall, all the levels (i.e. satisfaction, impact on life, and life change) were high, and each pattern is somewhat different from each other. Many participants answered significant positive impact on their lives (i.e. scale 10) and very significant life change (i.e. scale 10), whereas not many respondents considered the satisfaction level as amazing (i.e. scale 10).

4.5. Recommendable resources

The recommendable online resources that people use for self-directed informal learning when they have a fairly simple task or question were Wikipedia (25.9%), YouTube (8.0%), Ask.com (5.0%), Khan Academy (4.0%), Dictionary.com (3.0%), Wolfram Alpha (2.0%), and Facebook (2.0%). The recommendable learning resources that significantly influence their lives in a positive way were Wikipedia (10.8%), Khan Academy (5.9%), Ted (5.9%), YouTube (4.9%), MERLOT (3.8%), BBC (2.2%), and MIT Open Course Ware (2.2%).

5. Discussion

A variety of the information and knowledge is available online. The contexts for learning have become complex due to the fact that learning happens across the time and places (Greenhow & Robelia, 2009). Thus, people can easily become a self-directed learner and make decisions on what information and knowledge are important for them (Derrick, 2003). Online learning resources give opportunities for learners to develop their self-directed learning skills and metacognitive awareness (Dunlap &

Lowenthal, 2011). The purpose of this study was to explore the motivational factors of self-directed informal learning. Three aspects could be found in both motivation and key factors for self-directed informal learning: (1) freedom and choice, (2) control, and (3) interest and engagement.

5.1. Freedom and choice

The participants responded more on internal aspects ($N = 600$, 714.3%) than external aspects ($N = 321$, 382.1%) (see Tables 1 and 2). Most of the participants responded “Choice or freedom to select the topic or resources”; “Freedom to learn”; “Choice” as self-directed informal learning motivation factors. Such results parallel claims by humanistic psychologists (Rogers, 1985) as well as researchers studying intrinsic motivation (Deci & Ryan, 1985). Suffice to say, there were many factors in online informal learning success. The result might also be the consequence from the openness of informal learning as opposed to the relatively strict environment of formal situations. As Wolters (2011) points out, the openness of the online learning resources might have attracted the learners who have less freedom to make decisions as when, how, with whom, and how long to learn in formal learning contexts. Without the freedom and choice, learners will not be successful in self-directed learning (Loyens et al., 2008). With the freedom and choice, learners can be autonomous in their abilities to make a learning-related decision regardless of the time and location (Derrick, 2003). Autonomous learners should also consider the responsibility for a learning situation (Derrick, 2003). For example, during the learning through online resources, “lost-in-hyperspace phenomenon” often happens, which refers to “experiencing disorientation due to information overload and aimlessly following hyperlinks” (Scholl et al., 2009, p. 524). This is the reason why the learners need to control their own learning.

5.2. Control

A sense of control over one’s self-directed informal learning paths seems highly important and beneficial. In fact, most of the participants in this study responded “Feeling of personal control over my own learning” and “Control over the activity or resource” as self-directed informal learning key factors and motivation factors. In the formal learning environment (e.g. traditional classroom), the instructor usually has a control over the learning activities and context, which leads the students to have less opportunity to engage in contextual control and regulation (Pintrich, 2004). However, online learning resources provide opportunities for the learners to “personalize their online existence, and to develop their own critical identities through their control of a range of tools” (Hall, 2009, p. 29).

It has been suggested that one of the most significant aspects for a successful informal learning is to enable learners to control their own learning (Burton & Brown, 1979). However, learning through online resources might be demanding for learners because of these self-control, monitoring, and management aspects. Learners might suffer from the effort to reduce disorientation and increase the quality of their learning outcomes (Scholl et al., 2009). This is the reason why interest and engagement are essential for successful self-directed informal online learning.

5.3. Interest and engagement

This study explored the reasons why learners are so engaged and excited to learn informally online. Most of the participants responded “Interest in the topic” and “Fun” as self-directed informal learning key factors and motivation factors. Informal learning can shape what is learned in learning contexts as learners discover something related to their particular interests (Greenhow & Robelia, 2009).

Learner engagement is one of the impactful motivational factors of self-directed informal online learning because learners’ engagement and interest in learning is a required aspect when regulating motivation (Wolters, 2011). Learner engagement can be viewed as a multidimensional construct including observable factors (i.e. external factors) as well as non-observable factors (i.e. internal factors) (Wolters & Taylor, 2012). This engagement includes learners’ behavior to seek learning materials to satisfy a curiosity (Dabbagh & Kitsantas, 2012). This satisfaction leads learners to become highly motivated, to a more intensive engagement (Teo, 2010). Therefore, interest and engagement are essential for self-directed learning. In addition, the motivational factors (e.g. pursuing interesting and enjoyable learning resources) help learners retain their learning activities, maintain their

motivation, and overcome a loss of motivation (Dabbagh & Kitsantas, 2012; Wolters, 2011). Still, not many participants in this study considered the satisfaction of online learning as “amazing”. The relatively low level of satisfaction might be related to the need for criteria of successful completion in informal learning, which would lead to feelings of satisfaction (Paris, 1997).

Intrinsic motivation could lead learners to engage them in their own learning activities in a more self-directed way (Dunlap & Lowenthal, 2011). An important point is that learners can choose and personalize their learning content and necessary tools through a variety of online resources, which leads to the success of independent learning (McLoughlin & Lee, 2010).

5.4. Future research

This study has some limitations. First, the method of data collection was self-report. Clearly, such self-reports might be vastly different from the reality. Second, it is impossible to make generalizations about the results of this study due to the small size sample. In addition, the online learners vary along several significant dimensions. For example, younger learners might have more technological fluency, digital citizenship, and other learning competencies for informal learning through online resources (Greenhow & Robelia, 2009).

Despite the limitations, the findings of this study have important implications for understanding of factors determining motivation of informal learners and self-directed aspects of informal learning when using online resources. The authors contend that additional research focused on learners’ everyday use and learning with online learning resources in diverse contexts is needed. Research also needs to continue examining learners’ online behavior, especially how they navigate, understand, trust, and critically evaluate their learning resources in order to verify the factors found in this study.

6. Conclusion

With the support of emerging technologies, learning is becoming self-directed and informal. Still, informal learners’ learning goals, obstacles, and successes when accessing online content have not been fully investigated. This study shows that the main flow of self-directed informal learning through online resources: freedom and choice; control; and interest and engagement. The result also helps us think about our current formal education environments, which might burden the student with the restricted opportunity to enjoy their own learning.

Acknowledgment

Special thanks go to Self-directed Open Learning Environments (SOLE) research team at Indiana University.

Funding

The authors received no direct funding for this research.

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Citation information

Cite this article as: Motivational factors in self-directed informal learning from online learning resources, Donggil Song & Curtis J. Bonk, *Cogent Education* (2016), 3: 1205838.

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