Sakarya University Journal of Education

ISSN : 2146-7455
Publisher : Sakarya University

Vol. 14, No. 2, 376-390, 2024
DOI: https://doi.org/10.19126/suje.1388069

Research Article

Essential Learner Characteristics in Distance Education According to Experts

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Received: 08.11.2023
Accepted: 28.06.2024
Available Online: 30.08.2024

Abstract: The importance and impact of distance education are increasing thereby making it imperative to study its effectiveness and efficiency as regards student success. In this study, we focused on the importance of factors related to student success and priorities in distance education according to experts. We conducted a literature review for developing a spectrum of variables, as well as a survey method for collecting expert views to determine their order of importance. We scanned WoS-indexed journals in the Web of Science database using these variables, adding the keywords "online learning" and "distance education" between 2010 and 2022 to calculate the frequencies of the variables in research papers to confirm our proposed variables. We took the views of 15 academics working in the field of distance education to determine their priorities. According to the results, self-regulation was the most important learner characteristic for success in distance education. This variable was followed by learning self-efficacy, motivation, technology self-efficacy, cognitive learning strategies, goal setting, metacognitive skills, attitude towards e-learning, locus of control, and academic self-concept. These variables should be considered in instructional design processes, and be monitored and developed in distance learners for success.

Keywords: Distance Education, Learner Characteristics, Expert Opinion

1. Introduction

Distance education is a significant component of academia that contributes to formal education and supports lifelong learning and professional development opportunities. By providing flexibility and autonomy to support learning (Gümüş & Fırat, 2016; Moore, 2013; Schneller & Holmberg, 2014), enabling individuals to progress at their own pace, facilitating access to rich and diverse learning resources and materials (Şirin & Tekdal, 2015), responding to individuals' desires for self-improvement (Gül & Arabacı, 2018), and facilitating the development of micro-competencies (Pollard & Vincent, 2022), distance education is drawing increasing interest.

Furthermore, the COVID-19 pandemic has turned online and distance education into a solution for the continuity of formal education. The pandemic has made remote operation of education systems mandatory. However, this situation caught students, teachers, administrators, parents, and other stakeholders unprepared in many aspects. The rapid transition to emergency remote education during this pandemic, referred to as urgent distance education in the literature (Karadağ & Yücel, 2020), has drawn attention to criticisms of its effectiveness and findings related to learning losses (Donnelly & Patrinos, 2021). Even before the pandemic, there were criticisms of the success rate in distance education. Examples of these criticisms include lack of motivation (Kuloğlu, 2020; Uçar & Kumtepe, 2016), inability to receive instant feedback (Şirin & Tekdal, 2015), insufficient interaction (Cole et al., 2014; Kuo et al., 2013), technical inadequacy, time constraints, not feeling a sense of belonging to the learning group (Enfiyeci & Filiz, 2019), and inability to set goals (Neroni et al., 2018).

The question of whether distance education is more effective than face-to-face education is an old yet still relevant topic in the field, and there is no simple answer. While some studies claim that face-to-face instruction is more productive (Deka & McMurry, 2006; Helms, 2014), others suggest that students can be equally successful in distance education (Deka & McMurry, 2006; Dell et al., 2010; El Refae et al., 2021; Fouad et al., 2021; Glazier et al., 2020; Gürsul & Keser, 2009; Horspool & Lange, 2012; Iglesias-

Cite as (APA 7): Akça, G., & Akgün, Ö. E. (2024). Essential learner characteristics in distance education according to experts. *Sakarya University Journal of Education, 14*(2), 376-390. https://doi.org/10.19126/suje.1388069

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Pradas et al., 2021; Larson & Sung, 2009; Yen et al., 2018). These conflicting results may stem from insufficient consideration (and control) of learner characteristics, which has become a significant factor in research and comparisons.

In online learning environments, students are responsible for their own learning and decide when, where, how, and for how long they will access learning materials. When examining the literature, variables influencing students' success in online environments include self-regulation (Jansen et al., 2020; Kizilcec et al., 2017; Šašić, 2023; Zimmerman, 2000), self-efficacy (Won et al., 2023), motivation (Kuloğlu, 2020; Pan, 2023; Zikai & Yuanyuan, 2023), technology skills (Wang et al., 2013), personality traits (Bahçekapılı & Karaman, 2015), learning styles (Çakıroğlu, 2014), immediate feedback (Şirin & Tekdal, 2015), interaction (Cole et al., 2014), a sense of belonging to a learning group (Enfiyeci & Filiz, 2019), goal setting (Neroni et al., 2018), cognitive learning strategies, academic self-concept (Zhang et al., 2022), and metacognitive skills (Rivers et al., 2020; Anthonysamy, 2021). Li (2002) points out in her study that distance education might not be suitable for everyone as learners need specific skills and competencies to be successful in distance education. Therefore, identifying and examining these variables is crucial, and efforts should be made to determine the factors influencing learning performance and success rate in distance education.

In the literature, there are studies that examine the factors influencing success in distance learning environments. For instance, Alhabeeb and Rowley (2018), categorized factors related to learner success in online learning environments from the perspective of both students and academics. These categories from the students' perspective are technological infrastructure, instructor characteristics, student characteristics, e-learning resources, support and training, ease of access, and seeking help. From the viewpoint of the, the categories include student characteristics, e-learning system, experience, ease of access, instructors, e-learning support, support and training, e-learning tools, and participation. Variables considered as common elements by both academics and students in the study were identified as student characteristics, instructor characteristics, support and training, and ease of access.

In a systematic review conducted by Martin et al. (2020) examining research on online learning and teaching from 2009 to 2018, findings related to learner characteristics indicated that studies focused on self-regulation skills, motivation skills, academic skills, attitudes, cognitive, and demographic characteristics without a specific order.

Min and Yu (2023) conducted a systematic review examining the factors influencing success in blended learning environments, focusing on the dimensions of learners, teachers, materials, and objectives. It was concluded that critical factors affecting success in the learner aspect include learners' characteristics, learning pace, commitment, attitudes, motivation, cognition, computer proficiency, and demographic characteristics. Similarly, Rizana et al. (2020) conducted a systematic review on the variables affecting the success of e-learning processes from different viewpoints. Within this scope, variables such as computer self-efficacy, attitude toward e-learning, and self-regulated learning in the learner aspect were obtained. Reviewing the literature reveals that factors influencing success in online learning environments are examined from various capacities. Although similar results are obtained in studies, differences are also noticeable. Another notable point in the studies is the lack of consensus on which of these variables affects success more. In this regard, our study is significant in filling the gap in the literature.

The presented studies address numerous variables related to student characteristics that can influence learning and success in distance education. This study aims to identify the variables influencing learning and learner success and priorities in distance education environments based on expert opinions. In this context, this study aims to provide insights to professionals creating distance education environments and researchers in the field of distance education. For this aim, the study focuses on the following

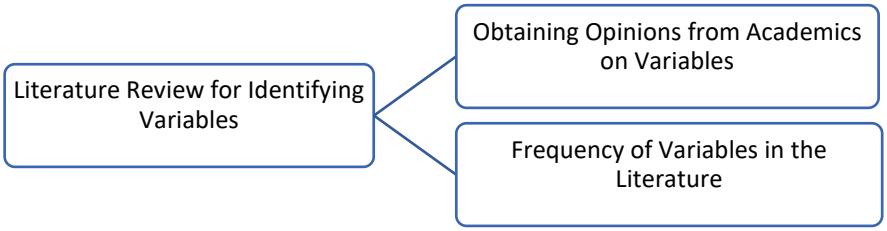
research questions: (1) What are the prominent variables in articles related to learner characteristics in the literature indexed in scientific journals on the Web of Science indexes? (2) According to the opinions of academics and professionals in the field, what is the order of priority with these variables?

2. Methodology

We conducted a descriptive literature review and established a survey model in this study. Through an extensive review of the existing literature, the authors determined the variables affecting learners' performance in distance learning environments. The data obtained from the literature review was presented for expert review in a survey. Survey studies are the types of research in which the views of a group are ascertained (Büyüköztürk et al., 2024).

Figure 1

Flowchart of the Study



2.1. Participants

Within the scope of this study, we invited 20 published experts with field experience who carry out scientific studies, such as a director in a distance education center or a creator and manager of a distance education environment. A total of 15 experts accepted our invitation to participate in the research. Three were 3 women, 12 were men, and all were academics; their title, gender, and fields of expertise are presented in Table 1.

Table 1

Personal Information of Experts who Participated in the Study

Expert	Title	Gender	Field of Study
E1	Prof. Dr.	F	Computer and instructional technology education, information technology education, open and distance learning, distance education design and management
E2	Prof. Dr.	M	Computer and instructional technology education, open and distance learning, distance education design and management, instructional design
E3	Prof. Dr.	M	Computer and instructional technologies education, open and distance learning, distance education design and management, instructional design, educational technologies
E4	Prof. Dr.	F	Computer and instructional technology education, information technology education, open and distance learning, distance education design and management
E5	Prof. Dr.	M	Distance education, m-learning, e-learning, open education resources
E6	Prof. Dr.	F	Computer and instructional technologies education, distance education design and management, instructional design, educational technologies

Expert	Title	Gender	Field of Study
E7	Prof. Dr.	M	Computer and instructional technology education, distance education design and management
E8	Assoc. Prof.	M	Computer and instructional technologies education, information technologies education, instructional design, distance education design and management, educational technologies
E9	Assoc. Prof.	M	Online learning, blended learning, massive open online courses (MOOC), technology-enabled learning environments
E10	Assoc. Prof.	M	Computer and instructional technology education, information technology education, open and distance learning, distance education design and management
E11	Assist. Prof.	M	Computer and instructional technology education, information technology education, open and distance learning, distance education design and management
E12	Assist. Prof.	M	Computer and instructional technology education, information technology education, open and distance learning, distance education design and management
E13	Assist. Prof.	M	Educational sciences, curricula and teaching, educational/educational technologies
E14	Assist. Prof.	M	Computer and instructional technology education, educational technologies, open and distance learning, instructional design
E15	PhD	M	Computer and instructional technology education, educational technologies, open and distance learning, educational technologies

The experts have studied distance education, open and distance learning, instructional design, and online learning. Seven of them are professors, three of them are associate professors, four of them are assistant professors, and one of them has a PhD.

3. Data Collection Process

We collected data three times in this study. Initially, we collected data from a general literature review to determine all variables affecting the success of distance education. The purpose of this initial review was to establish the spectrum of the variables. Then we conducted a survey with experts to determine the importance of the variables. And finally, we did a second literature review with narrowing indexes and calculated the frequencies of the variables to check whether they are compatible with the experts' views. The variables affecting students' success in online learning were initially determined by conducting a general literature review. Papers published before and in 2021, and indexed in Google Scholar, ERIC, ScienceDirect were covered. The keywords of "distance learning", "distance education", "e-learning", "learner success" and "online learner" were used. The purpose of this first review was only to determine the variables, and we did not collect and calculate quantitative data for this part. 12 variables were obtained from this review. Then we consulted the experts on these variables to determine their views. After that, we performed a second literature review for identifying the frequencies of these variables from the Web of Science database to confirm their significance. The selection criteria for the articles included in the second literature review are as follows:

- Date of publication from 2010 to 2022 (both years are included)
- Articles published on the WoS-indexes
- Keywords used in searches are included in the title or keywords of the study

The number of articles according to keywords is presented in Table 2. The list of variables obtained from the literature review, along with their definitions, was given to three experts for a preliminary check and feedback. The form, which was finalized after the feedback was received, was sent via e-mail to experts. The experts were asked to score them according to their effect on learning in distance education with 1 being not important and 10 being very important.

4. Findings

The initial literature review resulted in 12 variables. These variables were obtained from the WoS-indexed journals in the Web of Science database, adding the "online learning" and "distance education" keywords. Duplicate articles were removed, and studies relating to the predetermined principles were selected. These articles were individually examined, and their keywords were also reviewed for appropriateness. The number of studies for each variable are presented in Table 2. These variables were, from higher frequency to lower, self-regulation skills, cognitive learning skills, goal orientation, locus of control, motivation, academic-self-concept, metacognitive skills, self-efficacy toward technology, attitude toward online learning, autonomy, and self-efficacy toward online learning. There are 11 variables in Table 2 because the demographic variables in the literature also had several dimensions and sub-dimensions (level of education, type of delivery, study type, gender, and so forth), resulting in many studies related to this variable. Listing them under one heading would have been ambiguous, so we excluded them from the table and consulted the experts.

Table 2

Keyword Groups in Literature Review and Their Frequencies

Variables	Frequencies
"Self-regulation" + learning	356
Cognitive learning skills	162
"Goal Orientation" + learning	130
"Locus of Control" + learning	60
"Motivation" + "online learning"	24
"Academic Self-Concept" + learning	24
"Metacognitive skills" + learning	21
Technology Self-efficacy	17
"Attitude" + "online learning"	12
"Autonomy" + "online learning"	11
"Online Learning" + "Self Efficacy"	7

The experts were consulted on the variables in Table 2 to determine their order of significance. The feedback given by the experts for each variable are presented in Table 3. In Table 3, we abbreviated the names of the variables to provide ease of use for reporting.

Table 3

Expert Feedback on the Variables

	TSE	MS	SRS	SEL	M	CLS	AS	SA	LC	DC	A	GS
E1	7	9	10	10	10	8	7	8	8	6	8	9
E2	7	8	10	7	9	7	6	9	4	3	5	6
E3	8	7	7	9	5	7	8	9	8	5	8	7
E4	10	6	10	6	10	8	6	8	8	1	10	8
E5	10	10	10	10	10	10	3	6	4	4	7	10
E6	7	10	10	9	9	9	8	9	8	7	8	9
E7	9	7	10	10	6	7	8	10	6	6	8	10
E8	9	8	10	9	8	8	7	6	6	5	6	5
E9	4	7	10	8	8	8	4	4	9	5	8	9
E10	9	7	10	10	9	7	7	9	6	5	8	7
E11	9	7	7	9	8	7	6	7	6	5	9	9
E12	10	8	10	10	10	10	8	5	7	2	10	10
E13	7	10	10	10	10	10	9	9	9	9	9	10
E14	8	8	10	7	8	7	6	7	6	6	6	6
E15	10	7	9	10	10	8	7	8	8	6	8	7
Mean	*8.3*	*8*	*9.5*	*8.9*	*8.7*	*8.1*	*6.7*	*7.7*	*6.9*	*5*	*7.9*	*8.1*
SD	*1.7*	*1.3*	*1.1*	*1.3*	*1.5*	*1.2*	*1.6*	*1.7*	*1.6*	*2*	*1.4*	*1.7*

TSE: Technology Self-Efficacy, MS: Metacognitive Skills, SRS: Self-Regulation Skills, SEL: Self-Efficacy for Learning, M: Motivation / Motivation (For E-Learning), CLS: Cognitive Learning Strategies, AS: Academic Self Concept, SA: Student Autonomy, LC: Locus of Control, DC: Demographic Characteristics, A: Attitude (Towards E-Learning), GS: Goal Setting.

According to the scores given by the experts, the most important variable affecting students' success in open and distance learning is self-regulation, with a 9.53 average (SD: 1.1) out of 10 points. In addition to self-regulation skills, the variables of self-efficacy for learning (M:8.93, SD:1.3), motivation (M:8.66, SD:1.5), technology self-efficacy (M:8.26, SD:1.7), and goal setting (M:8.13, SD:1.7) were also among the top 5 variables. According to the experts, among the 12 variables, demographic (M:5, SD:2) differences were the least important factor in distance learning.

Considering the expert opinions and the study frequency data in the literature, self-regulated learning skills were the most prominent variable affecting success in distance learning environments.

5. Discussion and Conclusion

Ensuring student success in distance education differs from traditional education. Different variables affect this process because students are physically far from instructors, classrooms, and classmates. Online learner variables can affect learning processes and online learning may not be appropriate for every learner (Kaufmann, 2015). There are some studies investigating external, internal, or systemic factors such as content quality, LMS and system quality, provided interaction, perceived enjoyment and satisfaction, usage and demographics (e.g. sex, age, GPA), institutional/administrative support, system

configuration and technical design, the level of computer skills among learners that affect the success of distance education (Eren, 2024, James, 2021; Pinzon & Guarnizo, 2022; Rizana et al., 2020; Simpson, 2012). However, there are very few studies on prioritizing learner-related variables when designing distance education. Learner characteristics are one of the most important critical success factors besides teacher characteristics, course materials and objectives, learning components according to institutional objectives, ICT system, and learning environment (Min & Yu, 2023). This study focused on learning components and their prominence. Distance educators and DE Institutions should know their students' attributes and how to assist them to be successful (Yükseltürk & Baturay, 2012).

According to the results, self-regulation skills and, directly related to them, self-regulated learning (SRL) skills can be defined as the prominent variables affecting learner success in distance education. Self-regulation is self-constructed thoughts, feelings, and behaviors toward achieving goals (Zimmerman, 2000), while self-regulated learning is the degree to which students actively participate in their own learning processes (Zimmerman, 2008). Self-regulated learning plays a significant role in learners' success in distance and online education (Sharp & Sharp, 2016). It helps them to monitor, control, and regulate their cognitive motivation and behavior according to their goals (Co & Shen, 2013). In a distance learning environment, self-regulating learning is crucial for students to learn independently and achieve better outcomes satisfactorily (Turan et al., 2022). Students who engage in peer self-regulated learning in a distance teaching system show better motivation, self-efficacy, and reflection after learning activities (Kuo et al., 2023). Additionally, self-regulated online learning skills significantly predict academic success in distance education (Tülübaş, 2022; Xu et al., 2022). Strengthening the self-regulatory characteristics of participants in distance education programs can improve completion rates and positively contribute to students' success in distance education. According to Duzgun and Basaran's study (2021), during the COVID 19 pandemic, self-regulated learning was the second significant predictor of distance education success after their previous face-to-face achievement among primary school students, and they have significant, positive, and moderate correlation. Another study conducted with postgraduate students showed that SRL was the second significant predictor of students' satisfaction after tutor-students interaction (Lysitsa & Mavroeidis, 2024). These results confirm that SRL is the prominent variable as a learner trait. Educators and students see distance education as a good alternative to face-to-face but students with low self-regulation and low self-efficacy may have problems in learning in this way and need support (Roick et al., 2023). This issue is very important for administrators, educators, and instructional designers.

The second prominent variable is self-efficacy for learning. Self-efficacy is an individual's ability to perform the actions necessary to complete a task successfully (Bandura, 1977). Research indicates that self-efficacy beliefs can significantly impact students' motivation, persistence, and willingness to engage with course materials in online settings and play a crucial role in their engagement, performance, and overall success in distance education (Wu, 2023).

The third variable is motivation. Motivation is effective in initiating and maintaining activities for a specific purpose (Schunk et al., 2014), such as continuously working on a learning task, even if it is hard. Motivation is another important factor in students' success in distance education. If online learning activities are not well-designed and developed, they may not stimulate student motivation and related learning performance (Zikai & Yuanyuan, 2023). The learning activities must be appropriate to the learners, and continuous improvements and revisions are necessary to make learning activities more effective in the course delivery.

Technology self-efficacy is the fourth important variable. Technology self-efficacy is the belief that an individual has sufficient and correct skills to be successful in dealing with a technology-related task (Wang et al., 2013), such as using ICT in distance education. In the literature, there was a highly

significant positive relationship between academic self-efficacy and self-efficacy to use ICT, and self-efficacy for IT use is a good predictor of academic self-efficacy in distance education (Ali, 2021). An ICT course may be provided to e-learners as a prerequisite to enhance their academic self-efficacy and success.

Cognitive learning strategies, the fifth variable, are the ability of an individual to think, monitor, and evaluate their own learning while performing a learning task (Dabbagh, 2007). Cognitive learning strategies play an important role in affecting learners' learning experiences and success in distance education (Neroni et al., 2019). This research highlights the importance of incorporating cognitive learning strategies in distance education for learners to enhance their performance and learning. Monitoring them and providing some courses to develop students' learning strategies when needed may help increase achievement in distance education.

The other important learner characteristics are as follows: goal setting is the progress of the learning process or a conscious effort towards goals (Zimmerman, 2000). Goal orientation and self-regulation strategies were positively related to academic achievement in distance education (Zhou & Wang, 2019). Goal orientation is a positive predictor of academic performance in distance education (Neroni et al., 2018). Metacognitive skills are the individual's awareness of his own cognitive structure and learning characteristics and the ability to monitor and regulate his own cognitive processes (Yükseltürk & Bulut, 2007). Students using metacognitive strategies in online learning can evaluate their learning and put more effort into regulating their learning process (Anthonysamy, 2021). Distance learners should be provided with practice on how to utilize metacognitive strategies to enhance learning and performance.

Attitude encompasses feelings and behaviors during the learning process. There are many studies about learners' attitudes toward distance education, especially during the COVID-19 pandemic. There are high attitude results (Marjerison et al., 2020), and low attitude results (Kaban, 2021). According to Tuckel and Pok-Carabalona (2023), students' attitudes affect their preferences and tendencies about distance education. Learner autonomy refers to the learner's freedom to independently organize and monitor their own learning process by making decisions about what, when and how to learn based on their individual needs, interests and abilities. (Boyadzhieva, 2016). There was a positive correlation between learner autonomy and student-student and tutor-student interactions (Fotiadou et al., 2017). Moreover, students' autonomy affects their satisfaction with distance education (Abuhassna et al., 2020). Locus of control is a belief about the extent to which behavior (internal or external) influences successes or failures (Whittington, 1995). As expected, in some studies, distance learners with internal locus of control had high achievements, and those with external locus of control had low achievements (Naseer & Majid, 2018). However, sometimes, there was no significant effect (Gökçeaslan & Alper, 2015). Academic self is expressed as the degree of belief and self-confidence that the individual will be successful in a job where the academic aspect is dominant (Dabbagh, 2007). There is a positive and strong relationship between academic self-concept and academic achievement in distance learning (Ajmal & Rafique, 2018), and it is suggested that workshops be prepared to enhance students' self-concept so that they may understand their potential and abilities to perform better in distance education. Demographic factors such as age, gender, class level, socioeconomic status, family and work responsibilities, and other personal characteristics can influence students' experiences, performances, and outcomes in distance education. There are too many studies about these variables and their effects on distance learning. Understanding and considering these demographics' effects on distance education can help educators improve their distance education programs to meet their students' needs.

It can be said that self-regulation is an umbrella concept covering self-efficacy, motivation, cognitive and metacognitive strategies, and goal setting (Pintrich, 2000, 2004; Pintrich et al., 1991; Zimmerman, 2011). At this point, we do emphasize the importance of self-regulation in distance education (Barnard-

Brak et al., 2010; Cazan, 2012; Lavasani et al., 2011; Sharp & Sharp, 2016; Wang et al., 2013; Yükseltürk & Bulut, 2007; Zimmerman, 1990; Zimmerman, 1986).

In conclusion, learners' self-regulation, self-efficacy, motivation, cognitive strategies, metacognitive skills, and other characteristics play an important role in their success in distance education. This study tried to draw a picture of these variables to highlight and prioritize them. We suggest instructional designers and educators consider monitoring and incorporating these variables to provide support to help students utilize and develop these skills effectively in distance education. These personal factors in distance education will be foci, and new studies will contribute to further practice and research in better learning in distance education. Their effects on learning can be determined comparatively in more detail, and predictions can be made for learner success by developing measurement and learner support and development models. The needs of the students can be considered before instruction or within instruction with these models, and proper support can be available to the students when needed.

6. Limitations

The factors discussed in this study naturally reveal a general point of view in online and distance education. The order of importance of these features may vary depending on contextor the learners' level. We recommend that future research and applications be carried out by collecting data from learners, constructing them according to these contextual features, and conducting research that will reveal the effects of these variables specific to the context.

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Article Information Form

Author(s) Contributions: All authors contributed equally to the writing of this paper. All authors read and approved the final manuscript.

Conflict of Interest Disclosure: No potential conflict of interest was declared by the author.

Copyright Statement: Authors own the copyright of their work published in the journal and their work is published under the CC BY-NC 4.0 license.

Supporting/Supporting Organizations: No grants were received from any public, private or non-profit organizations for this research.

Ethical Approval and Participant Consent: Ethical committee approval was received from Istanbul Medeniyet University, Ethical Committee for Education by decision number 2022/-1-07 and date 03.01.2022.

Plagiarism Statement: This article has been scanned by iThenticate.