The effect of Self-Directed Learning on the relationship between Self-Leadership and Online Learning among university students in Turkey

Mehmet Durnalı*

doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165

Received: 7 March 2020
Accepted: 17 November 2020

Abstract: More and more people across the world seek a university education. Therefore, universities offer full or partial distance undergraduate and postgraduate degrees to meet that demand. Distance education has become more widespread with advances in the Internet and computer technologies and online learning and teaching software (e.g., Learning Management Systems). The spread of the Coronavirus disease (COVID-19), which broke out in early 2020, has also played a significant role in the increased popularity of distance education. Therefore, investigating and reporting upon university students' self-leadership (SL) behaviors, self-directed learning (SDL) skills, and online learning (OL) attitudes in such learning environments is both timely and critical. This empirical study used a relational survey model to investigate SL, SDL, and OL among university students. The sample consisted of 835 students in Turkey. Data were collected using the "Self-Directed Learning Scale (SDLS)," "Revised Self-Leadership Questionnaire (RSLQ)," and "Online Learning Attitude Scale (OLAS)." Data were analyzed using descriptive statistics, Pearson coefficient, Confirmatory Factor Analysis (CFA), and Structural Equation Modeling (SEM). SL was moderately and positively correlated with SDL and OL. SDL was moderately and positively correlated with OL. SDL played a fully mediating role in the relationship between SL and OL. SL predicted OL in both the indirect and total effect model. This study addressed university students' perceptions and tested a model to provide empirical evidence for the relationships and predictions of SL, SDL, and OL. Therefore, it is

* **Mehmet Durnalı** (durnali@beun.edu.tr), PhD in educational administration, is currently Assistant Professor at the Faculty of Education; Zonguldak Bülent Ecevit University, Zonguldak, Turkey.

The author is grateful to university students who filled the data forms and hereby declares that there is not any conflict of interest concerning the material presented in the manuscript.

More information about the author is available at the end of this article.

believed that the results will help advance the constructs of SDL, SL, and OL paradigms.

Keywords: Self-leadership; self-directed learning; online learning attitude; university students; structural equation modeling (SEM).

I. Introduction

Higher education institutions should adapt relevant advances in science, technology and education to update their educational policies or teaching methods to fulfill the learning needs of new generation students. Particularly, they should renew education delivery which has been significantly transformed by the ongoing advances in online technology.[1] The innovations in the field of education are particularly evident in online bachelor, master and doctoral degree programs offered by universities all over the world. Some of those programs include full-time online courses while others offer blended ones. Many universities offer online learning (OL). According to The Turkish Council of Higher Education (CoHE),[2] there were two hundred and eleven universities in Turkey in the academic year 2018-2019. Eighty-nine of these offered full or partial distance undergraduate and postgraduate degrees such as The Open Education Faculty of Anadolu University and Sakarya University. The global reach of distance learning can be demonstrated by Utrecht University in the Netherlands, the Open University in the UK, the Open University of Catalonia in Spain, Walden University in the USA and nine public universities in Yemen[3] as examples.

While universities provide online learning, they can benefit from advanced technology to deliver the course contents to university students as optimally as possible. According to Pearson et al.,[4] OL mainly offers

[1] Adnan H. Aldholay, Osama Isaac, Zaini Abdullah, and T. Ramayah, "The Role of Transformational Leadership as a Mediating Variable in DeLone and McLean Information System Success Model: The Context of Online Learning Usage in Yemen," *Telematics and Informatics 35*, no. 5 (2018): 1432.

[2] "Higher Education Knowledge Management System – Distance Education Statistics," The Turkish Council of Higher Education (CoHE), accessed October 20, 2020, https://istatistik.yok.gov.tr/.

[3] Adnan H. Aldholay, Osama Isaac, Zaini Abdullah, and T. Ramayah, "The Role of Transformational Leadership," *Telematics and Informatics 35*, no. 5 (2018): 1432.

[4] Victoria Pearson, Kate Lister, Elaine Mcpherson, Anne-Marie Gallen, Gareth Davies, Chetz Colwell, Kate Bradshaw, Nicholas Braithwaite, and Trevor Collins, "Embedding and Sustaining Inclusive Practice to Support Disabled Students in Online and Blended Learning," *Journal of Interactive Media in Education* 2019, no. 1 (2019): 1.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

numerous options for inclusive education practices such as providing access to digital learning resources. On the other hand, advances in technology have made it easy for learners to access information but harder for them to determine whether the information is relevant. Besides, learners do not have to learn this information in school. New learning styles replace the old ones, and therefore, self-directed learning (SDL) becomes more and more relevant. As a response to the needs of the era, schools are gradually modifying their teaching methods and providing more learner-centered environments. Individuals of information society should learn how to be self-directed learners,[5] promoting and reinforcing behavior providing people with the opportunity to learn and develop independently, constantly and reflexively is a fascinating and recurring theme in learning and development.[6] SDL as a self-regulation theory was, therefore, considered as an important issue related to OL and self-leadership (SL) as another self-regulation theory.

Not only do SL strategies improve achievement in the short run but symbolize life-long learning skills as well.[7] Efficient SL is a promising tool that provides people with the opportunity to take into consideration such self-sabotaging mechanisms as narcissism and arrogance that might create blind spots in terms of adaptation and learning and might result in reduced individual efficiency.[8] During learning, SL can help students analyze their strengths, weaknesses, opportunities, resources of motivations and challenges. SL is, therefore, an important learning element.

I.1. *The present study*

An evidence-based study on investigating the relationship among SL, SDL and OL in university students could not be found after the inclusive literature review. The aim of the study was, therefore, to investigate the relationship between SL, SDL and OL among university students and the mediating role of SDL in the relationship between SL and OL. Not only did

---

[5] D. Randy Garrison, "Self-Directed Learning: Toward a Comprehensive Model," *Adult Education Quarterly* 48, no. 1 (1997): 18-33.

[6] Uwe Napiersky and Stephen A. Woods, "From the Workplace to the Classroom: Examining the Impact of Self-Leadership Learning Strategies on Higher Educational Attainment and Success," *Innovations in Education and Teaching International* 55, no. 4 (2016): 441.

[7] Napiersky and Woods, "From the Workplace to the Classroom," 443.

[8] Charles C. Manz, "Taking the Self-Leadership High Road: Smooth Surface or Potholes Ahead?" *Academy of Management Perspectives* 29, no. 1 (2015): 133.

 ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

this study address students' perceptions of SL and its relationship with SDL and OL but also tested a model to provide empirical evidence for the understanding and implications of SL, SDL and OL. The relationships and prediction results could assist in improving SL, SRL and OL theories. The results revealed original pedagogical implications and pointed out some important issues regarding the development of policies on teaching and learning practices in higher education. Therefore, it is believed that this study will help to fill a gap in the literature as suggested by Houghton and Neck[9] and James.[10] They have proposed that further research should explore cross application of the theories with different measurements, and compare SL with other self-regulation theories.

II. Conceptual framework

II.1. *Self-Leadership*

Expanded SL is defined by Manz[11],[12] as an exhaustive self-influence perspective about performing motivating tasks as well as getting oneself to accomplish tasks that are not motivating. Expanded SL also involves the self-management of immediate behaviors[13] and a process through which one influences oneself to achieve self-direction and self-motivation which are necessary to develop desirable behavior and performance.[14] The desired behavior patterns for university students can include: good peer-to-peer communication, good communication with faculty members, sense of belonging to university, social connectedness, high motivation for high academic achievement, academic engagement, persistence, career preparation behavior, having no risky behaviors such as drug use, positive future prospects, self-efficacy assessment, etc.

---

[9] Jeffery D. Houghton and Christopher P. Neck, "The Revised Self-Leadership Questionnaire," *Journal of Managerial Psychology* 17, no. 8 (2002): 686.

[10] Angela M. James, "Self-leadership and Self-Regulated Learning: An Investigation of Theoretical Relationships," *Journal of Business & Leadership: Research, Practice, and Teaching (2005-2012)* 5, no. 1 (2009): 59-67.

[11] D. Randy Garrison, "Self-Directed Learning: Toward a Comprehensive Model," *Adult Education Quarterly* 48, no. 1 (1997): 18-33.

[12] Manz, "Taking the Self-Leadership High Road," 132.

[13] Charles C. Manz, "Self-Leadership: Toward an Expanded Theory of Self-Influence Processes in Organizations," *The Academy of Management Review* 11, no. 3 (1986): 585-600.

[14] Houghton and Neck, "The Revised Self-Leadership Questionnaire," 686.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Napiersky and Woods[15] also include a self-goal setting and self-regulation in the process. SL comprises certain behavioral and cognitive strategies that shape performance and it seems to be a promising tool for today's dynamic organizations.[16] Psychological empowerment is an expected outcome of SL.[17] According to Manz,[18] higher-level SL consists of three aspects; authenticity, responsibility and expanded capacity.

SL strategies involve three factors; behavior-focused, natural reward and constructive-thought pattern.[19],[20] *Behavior-focused strategies* focus on self-assessment, -reward and -discipline[21] and involve self-observation, -goal setting, -reward, -correcting feedback and practice.[22],[23] The behavioral aspects of SL concern setting goals with a self-administered contingent reward system combined with effective self-regulatory processes (behavioral observation and reflection and self-direction).[24]

Natural rewards are intrinsic rewards for task performance,[25] also involving a commitment to, belief in, and enjoyment of tasks for the sake of them.[26] Natural reward mechanisms also seek content and joy in tasks. Task-related perceptions or behaviors can also be altered to improve self-efficacy, self-control and task responsibility. The strategies in this category focus, in general, on the pleasant rather than the unpleasant aspects of tasks.[27] Naturally rewarding activities generally promote self-efficacy, self-control and purpose.[28]

---

[15] Napiersky and Woods, "From the Workplace to the Classroom," 441

[16] Houghton and Neck, "The Revised Self-Leadership Questionnaire," 675.

[17] Jeffery D. Houghton, Andrew Carnes, and Christopher N. Ellison, "A Cross-Cultural Examination of Self-Leadership," *Journal of Leadership & Organizational Studies* 21, no. 4 (2014): 416.

[18] Manz, "Taking the Self-Leadership High Road," 133.

[19] Joe S. Anderson and Gregory E. Prussia, "The Self-Leadership Questionnaire: Preliminary Assessment of Construct Validity," *Journal of Leadership Studies* 4, no. 2 (1997): 121,141.

[20] Manz, "Taking the Self-Leadership High Road," 135-36.

[21] Houghton and Neck, "The Revised Self-Leadership Questionnaire," 673.

[22] Houghton and Neck, "The Revised Self-Leadership Questionnaire," 673.

[23] Anderson and Prussia, "The Self-Leadership Questionnaire," 121.

[24] Napiersky and Woods, "From the Workplace to the Classroom," 442

[25] Christopher P. Neck and Jeffery D. Houghton, "Two Decades of Self-Leadership Theory and Research,"*Journal of Managerial Psychology* 21, no. 4 (2006): 281.

[26] Charles C. Manz, "Self-leadership... the Heart of Empowerment," *The Journal for Quality and Participation* 15, no.4 (1992): 80-85.

[27] Anderson and Prussia, "The Self-Leadership Questionnaire," 121.

[28] Manz, "Self-Leadership: Toward," 595.

© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

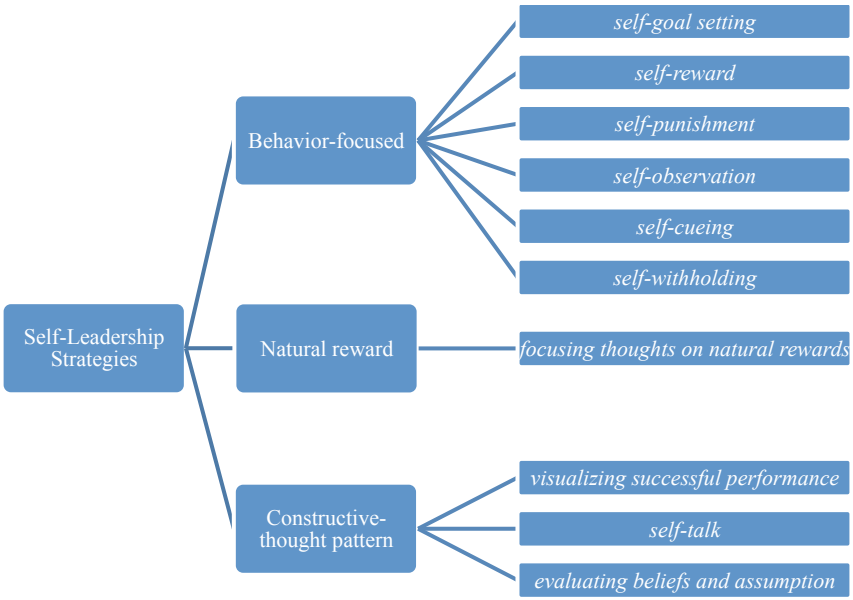

Figure 1
Self-Leadership Strategies

Constructive thought pattern strategies are based on the view that people can affect their own thoughts with an emphasis on mental activity and cognition. Effective SL focuses on self-influence of thoughts to provide people with the opportunity to make their thought processes more rigorous and consistent.[29] Four strategies can be undertaken to modify thinking dispositions and to improve SL: (1) evaluation of one's own thoughts and behaviors and development of beliefs, (2) sensory experiences addressing effective performance, (3) constructive inner speech for motivation and (4) promoting performance and utilization of constructive commands instead of ineffectual ones.[30,31]

[29] Manz, "Taking the Self-Leadership High Road," 135.
[30] Anderson and Prussia, "The Self-Leadership Questionnaire," 121.
[31] Gregory E. Prussia, Joe S. Anderson, and Charles C. Manz, "Self-Leadership and Performance Outcomes: The Mediating Influence of Self-Efficacy," *Journal of Organizational Behavior 19*, no. 5 (1998): 524.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Six factors (self-goal setting, self-reward, self-punishment, self-observation, self-cueing, and self-withholding) evaluate the behavior-focused strategies of SL. One factor (focusing thoughts on natural rewards) symbolizes the natural reward strategies. Three factors (visualizing successful performance, self-talk, and evaluating beliefs and assumption) take into account the constructive thought pattern strategies.[32]

According to Napiersky and Woods[33] self-goal setting, pro-active goal-related behavior, behavior regulation and direction, motivational awareness and optimism are important predictors of educational achievement. Prussia, Anderson and Manz[34] argue that SL strategies have a considerable impact on self-efficacy assessment. Mullen, Limberg, Tuazon and Romagnolo[35] report that high emotional intelligence correlates with leadership self-efficacy and SL. Seo[36] states that improving SL predicts career decision-making self-efficacy and career preparation behavior in culinary college students. These results indicate that SL has a positive impact on some factors affecting university students. Both SL and SDL are integrated with individual's behavior, motivation, and cognition[37,38] and they both increase self-efficacy.[39,40] The undergraduate students' SL and SDL were correlated positively.[41] SL and SDL readiness of nursing students are correlated significantly.[42] Consequently, the following hypotheses were developed:

---

[32] Houghton and Neck, "The Revised Self-Leadership Questionnaire," 766.

[33] Napiersky and Woods, "From the Workplace to the Classroom," 441.

[34] Prussia, Anderson, and Manz, "Self-Leadership and Performance Outcomes," 523.

[35] Mullen, Patrick R., Dodie Limberg, Victor Tuazon, and Shannon M. Romagnolo. "Emotional Intelligence and Leadership Attributes of School Counselor Trainees." *Counselor Education and Supervision* 58, no. 2 (2019): 112.

[36] Kyung-Hwa Seo, "The Effects of Self-Leadership on Career Decision-Making Self-Efficacy and Career Preparation Behavior- Focused on Culinary Major Students," *Culinary Science & Hospitality Research* 23, no. 2 (2017): 146.

[37] Manz, "Self-Leadership: Toward," 585-600.

[38] Dale H. Schunk and Barry J. Zimmerman, (eds.) *Self-Regulated Learning: From Teaching to Self-Reflective Practice*. (New York: Guilford Press, 1998).

[39] Peggy (Pei-Hsuan) Hsieh, Jeremy R. Sullivan, and Norma S. Guerra,"A Closer Look at College Students: Self-Efficacy and Goal Orientation," *Journal of Advanced Academics* 18, no. 3 (2007): 454.

[40] Prussia, Anderson, and Manz, "Self-Leadership and Performance Outcomes," 523.

[41] James, "Self-leadership and Self-Regulated Learning," 59,64.

[42] Sun-Young Lee and Yun-Young Kim, "The Effects of Self-Efficacy and Self-Directed Learning Readiness to Self-Leadership of Nursing Student," *Journal of Digital Convergence* 14, no. 3 (2016): 309.

Null Ha: The correlation coefficient between university students' self-leadership and their self-directed learning is zero.

Alternate Ha: The correlation coefficient between university students' self-leadership and their self-directed learning is significantly different from zero.

Moreover, perceived leadership is an influential factor for a student's own self-regulation and behavioral engagement in a small group online learning.[43] Effective leadership is positively related to academic retention/completion among PhD students' online learning.[44] Students can develop leadership skills through developing the skills of researching, taking responsibility, thinking, and solving problems in an online learning environment.[45] Consequently, the following hypotheses were designed:

Null Hb: The correlation coefficient between university students' self-leadership and their online learning is zero.

Alternate Hb: The correlation coefficient between university students' self-leadership and their online learning is significantly different from zero.

II.2. *Self-directed learning*

Knowles[46] states that SDL is a "basic human competence - the ability to learn on one's own" and "a process in which individuals take the initiative without the help of others in diagnosing their learning needs, formulating goals, identifying human and material resources, and evaluating learning outcomes". Garrison[47] defines SDL as an approach through which learners are motivated to assume personal responsibility and collaborative control of cognitive (self-monitoring) and contextual (self-management) processes to

---

[43] Kui Xie, Lauren C. Hensley, Victor Law, and Zhiru Sun, "Self-Regulation as a Function of Perceived Leadership and Cohesion in Small Group Online Collaborative Learning," *British Journal of Educational Technology* 50, no. 1 (2019): 465.

[44] Gomez, Doris, "Leadership behavior and its impact on student success and retention in online graduate education," *Academy of Educational Leadership Journal* 17, no.2 (2013): 13.

[45] Nesrin Bahçelerli, Tulen Saner, Zehra Altinay, Ebba Ossiannilsson, and Fahriye Altinay, "The Impact of Online Learning Context in Fostering Open Leadership Skills," *Proceedings of the 9th International Conference on Computer Supported Education*, 2017.

[46] Malcolm S. Knowles, *Self-Directed learning: A Guide for Learners and Teachers* (Chicago: Association Press, 1975): 17, 18.

[47] Garrison, "Self-Directed Learning," 18.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

develop and affirm meaningful learning outcomes. Based on Brockett,[48] Lounsbury et al.[49] define SDL as an inclination to participate in learning activities in which learners assume responsibility for constructing and carry out learning ventures autonomously without the involvement of other people. This study focuses on SDL defined by Lounsbury et al.[50] as "a personality trait that is relatively enduring over time and across situations for individuals." Although SDL is generally associated with independent research with motivated and experienced learners, research on adult education recommend that learners be encouraged for SDL[51] as a personality trait.[52]

SDL refers to psychological processes in which learners concentrate consciously on gaining knowledge and understanding how to solve problems.[53] SDL is the main skill that promotes lifelong learning.[54] Both teacher-and learner-focused pedagogies require SDL for successful learning and completion of courses. Learner-focused pedagogies demand that students acquire knowledge through extracurricular activities as part of the active learning process, and therefore, they should participate in SDL more often to solve and complete projects.[55] Educational methods reflect cultural and ideological values.[56] In the context of Turkey, Turkey's education system has many democratic educational standards adapted from western education culture and is still trying to integrate some in the context of the chapters of the European Union. It is known that the centralized education system of

---

[48] Ralph Brockett, "Self-directed learning and the hard-to-reach adult," *Lifelong Learning: The Adult Years 6, no 8* (1983): 16-18.

[49] John W. Lounsbury, Jacob J. Levy, Soo-Hee Park, Lucy W. Gibson, and Ryan Smith, "An Investigation of the Construct Validity of the Personality Trait of Self-Directed Learning," *Learning and Individual Differences* 19, no. 4 (2009): 411.

[50] Lounsbury, Levy, Park, Gibson, and Smith, "An Investigation of the Construct," 411.

[51] Susan Wilcox, "Fostering Self-Directed Learning in the University Setting," *Studies in Higher Education* 21, no. 2 (1996): 165.

[52] Susan L. Stockdale and Ralph G. Brockett, "Development of the PRO-SDLS: A Measure of Self-Direction in Learning Based on the Personal Responsibility Orientation Model," *Adult Education Quarterly* 61, no. 2 (2011): 162, 63.

[53] Huey B. Long, "Resources Related to Overcoming Resistance to Self-Direction in Learning," *New Directions for Adult and Continuing Education* 1994, no. 64 (1994): 114.

[54] Ting-Chia Hsu, "Learning English with Augmented Reality: Do Learning Styles Matter?" *Computers & Education* 106 (2017): 138. https://doi.org/10.1016/j.compedu.2016.12.007.

[55] Petra Garnjost and Leanna Lawter, "Undergraduates' Satisfaction and Perceptions of Learning Outcomes across Teacher- and Learner-Focused Pedagogies," *The International Journal of Management Education* 17, no. 2 (2019): 270.

[56] Anne K. Wong, "Culture in Medical Education: Comparing a Thai and a Canadian Residency Programme," *Medical Education* 45, no. 12 (2011): 1209-18.

© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

France was taken as an example when creating an education system of Turkey with a centralized structure. There are concepts such as democracy, individualism, equality, and innovation in the curriculum. In addition, there are universities that provide education in English and French. Moreover, universities offering distance education in Turkey have been becoming widespread. As a concept related to distance education, it can be said that the SDL has an important place in Turkey's university education.

The SDL concept has become progressively critical today because information processing and absorbing skills have become increasingly essential. For instance, learners today are exposed to a vast amount of information, and therefore, should learn how to self-learn.[57] From this point of view, SDL is important in any learning environment and applicable especially in web-based settings as it increases learners' control of instruction.[58] It is important also because it allows learners to decide what to learn and how to learn it.[59] According to Wilcox,[60] the emphasis of SDL on personal autonomy, responsibility and growth epitomizes some of the most fundamental principles of higher education. The general view that "universities must produce graduates who are self-directed learners" and the frequently-overheard wish of professors that "students should take responsibility for their own learning" support the view that SDL can be used in higher education.

In order to cope with the uncertainties that they may face in online learning environments, students need to set up or formulate their own best learning strategies. Self-directed students are expected to participate in more active learning activities online by asking questions and participating in discussions. SDL affects cognitive presence but not in non-blended learning environments.[61] Lee, Yeung and Ip[62] report that SDL constructs positively correlate with computer technology, and therefore, they recommend the use

---

[57] Han Na Suh, Kenneth T. Wang, and Brooke J. Arterberry. "Development and Initial Validation of the Self-Directed Learning Inventory with Korean College Students." *Journal of Psychoeducational Assessment* 33, no. 7 (2015): 687.

[58] D. Randy Garrison, "Self-Directed Learning and Distance Education," In *Handbook of Distance Education* (Mahwah, NJ: Lawrence Erlbaum, 2003)

[59] Garrison, "Self-Directed Learning," 20.

[60] Wilcox, "Fostering Self-Directed Learning," 166.

[61] Shuang Geng, Kris M. Y. Law, and Ben Niu, "Investigating Self-Directed Learning and Technology Readiness in Blending Learning Environment," *International Journal of Educational Technology in Higher Education* 16, no. 1 (2019): 17.

[62] Cynthia Lee, Alexander Seeshing Yeung, and Tiffany Ip, "University English Language Learners Readiness to Use Computer Technology for Self-Directed Learning," *System* 67, (2017): 99,105. https://doi.org/10.1016/j.system.2017.05.001.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

of technology to promote SDL. Hsu and Shiue,[63] SDL is associated with distance learning performance. These results suggest that SDL is related to some important higher education factors. SDL was, therefore, considered as an important issue related to self-leadership (SL) and online learning (OL). Therefore, the following hypotheses were set:

> *Null Hc: The correlation coefficient between university students' self-directed learning and their online learning is zero.*
>
> *Alternate Hc: The correlation coefficient between university students' self-directed learning and their online learning is significantly different from zero.*

II.3. *Online learning*

"Online learning," "e-learning," "distance learning," "blended learning",[64] "digital learning" and "computer-based learning" are used interchangeably. OL refers to teaching and learning mediated by information and communication networks such as the Internet.[65] Since the title of the related scale used in this study is the Online Learning Attitude Scale, OL was used in this study instead of "e-learning," "distance learning," etc. Thanks to advances in information and communication, OL allows learners to process more knowledge than would self-directed learning (SDL) and self-leadership (SL).

The number of online associate, undergraduate and graduate programs has significantly increased[66] with students', instructors' and educational administrators' increased awareness of the advantages of OL,[67] and the transition from elite to mass higher education and increased diversity of

---

[63] Yu-Chiung Hsu and Ya-Ming Shiue, "The Effect of Self-Directed Learning Readiness on Achievement Comparing Face-To-Face and Two-Way Distance Learning Instruction," *International Journal of Instructional Media* 32, no. 2 (2005): 143.

[64] Aldholay, Isaac, Abdullah, and Ramayah, "The Role of Transformational Leadership," 1421.

[65] Ruth Colvin Clark and Richard E. Mayer, *E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning* (San Francisco: Pfeiffer, 2008).

[66] Hale Ilgaz and Yasemin Gülbahar, "A Snapshot of Online Learners: e-Readiness, e-Satisfaction and Expectations," *The International Review of Research in Open and Distributed Learning* 16, no. 2 (2015): 172. https://doi.org/10.19173/irrodl.v16i2.2117.

[67] Hui-Ching Kayla Hsu, Cong Vivi Wang, and Chantal Levesque-Bristol, "Reexamining the Impact of Self-Determination Theory on Learning Outcomes in the Online Learning Environment," *Education and Information Technologies* 24, no. 3 (2019): 2159. https://doi.org/10.1007/s10639-019-09863-w.

© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

students.[68] According to The Turkish Council of Higher Education (CoHE), the number of students enrolled in associate, undergraduate, and graduate levels programs is 1,981,694 in total in the academic year 2018-2019. The total number of students enrolled at these levels in all universities is 7,740,502 in Turkey.[69] 6,932,074 university students enrolled in at least one distance education course to get a degree from the universities in the United States of America in fall 2018.[70] 365,000 students took at least one online course in Canadian universities and colleges in 2016-2017.[71] The Open University, which is the largest academic organization in the UK, provided distance learning for more than 2 million international students.[72] There were 1.06 million domestic and 420 thousand international students enrolled in Australian universities in 2016. Nearly 300 thousand of them (both domestic and international) took their course online[73] and 447,164 students enrolled at Open Universities Australia since 1993.[74] It is likely that the global e-learning market will be worth $325 Billion in 2025.[75] These numbers indicate that online learning activities provided by higher education institutions have been employed both in and outside Turkey.

OL has evolved in the twenty-first century as a worldwide platform to encourage users to participate in learning and to provide them with the opportunity to connect and collaborate with each other. OL is now integrated with social networks that allow learners and educators all around the world to interact with each other and benefit from free and accessible

---

[68] David Kember, Doris Leung, and Michael Prosser, "Has the Open Door Become a Revolving Door? The Impact on Attrition of Moving from Elite to Mass Higher Education," *Studies in Higher Education*, 2019: 1. https://doi.org/10.1080/03075079.2019.1629411.

[69] "Higher Education Knowledge Management System – Distance Education Statistics," The Turkish Council of Higher Education (CoHE), accessed October 20, 2020, https://istatistik.yok.gov.tr/

[70] "Fast Facts-Distance learning," National Center for Education Statistics (NCES), accessed October 20, 2020, https://nces.ed.gov/fastfacts/ display.asp?id=80

[71] "Canadian post-secondary enrolments: The role of online learning," Online Learning and Distance Education Resources, accessed October 25, 2020, https://www.tonybates.ca/2020/02/21/canadian-post-secondary-enrolments-the-role-of-online-learning/

[72] "The world's leading distance-learning provider," The Open University, accessed October 25, 2020, http://www.openuniversity.edu/

[73] Andrew Norton, Ittima Cherastidtham and Will Mackey, *Mapping Australian higher education 2018* (Grattan Institute).

[74] "Explore. Choose. Enrol.," Open Universities Australia, accessed October 26, 2020, https://www.open.edu.au/

[75] "27 Astonishing E-learning Statistics for 2020," Techjury, accessed October 27, 2020, https://techjury.net/blog/elearning-statistics/#gref

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

online resources.[76] OL is generally defined as a flexible educational approach, with flexibility referring to democratizing education. OL meets the needs of learners who are location-bound due to work, familial or other responsibilities or constraints such as disabilities or limited resources. OL reaches beyond geographical barriers and allows learners to enroll in courses at flexible times anywhere in the world[77] such as at their home. With the spread of the coronavirus (Covid-19) pandemic in the world, university education has been disrupted by this unexpected crisis and home-schooling has been started for many university students. For such home-schooling, OL has been providing flexible effective solutions. Furthermore, Kraut[78] emphasizes that it can "expand the reach and equity of education", especially in some countries (e.g. Yemen) where there is also a gender gap in the tertiary enrolment.[79]

The more online courses the students take, the more the educators and researchers focus on determining the best practices for OL and teaching.[80] There are some conceptual models that encompass effective OL. For example, Money and Dean[81] developed a conceptual model that identifies the following key components by which to describe student populations: cognition, knowledge, personality traits, motivation, technology self-efficacy and preferences, demographic attributes, and learning styles. OL focuses on the (1) what, (2) how and (3) why of learning: (1) The material comprises words or graphics such as diagrams, photos, animations and videos, (2) teaching occurs via desktop computers, laptops, tablets, smartphones or virtual reality and (3) the instructional objective is to alter learners' knowledge.[82] Unlike face-to-face education, OL involves

---

[76] Kaushal Kumar Bhagat, Leon Yufeng Wu, and Chang Chun-Yen, "Development and Validation of the Perception of Students towards Online Learning (POSTOL)," *Journal of Educational Technology & Society* 19, no. 1 (2016): 350.

[77] Shandell Houlden and George Veletsianos, "A Posthumanist Critique of Flexible Online Learning and its 'Anytime Anyplace' Claims," *British Journal of Educational Technology* 50, no. 3 (2019): 1007.

[78] Rebecca Kraut, ed. *Policy guidelines for mobile learning*. (UNESCO, 2013):10

[79] Aldholay, Isaac, Abdullah, and Ramayah, "The Role of Transformational Leadership," 1431.

[80] Hsu, Wang, and Levesque-Bristol, "Reexamining the Impact of Self-Determination," 2160.

[81] William H. Money and Benjamin P. Dean, "Incorporating Student Population Differences for Effective Online Education: A Content-Based Review and Integrative Model," *Computers & Education* 138, (2019): 78.

[82] Richard E. Mayer, "Thirty Years of Research on Online Learning," *Applied Cognitive Psychology* 33, no. 2 (August 2018): 152.

© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

asynchronous or synchronous (or both) interactions between educators and learners.[83]

Tallent-Runnels et al. emphasized that the synchronized interaction established between student and instructor in OL can provide in-depth communication. Students love to move at their own pace and learning outcomes appear to be the same as in traditional courses.[84] On the other hand, students taking asynchronous online master's-level courses participated in class social media group as supplemental social spaces. After they joined the group, their social presence became more positive and their learning interaction with their peers and instructor has increased.[85] In a two-group experiment, students who had the opportunity to use cloud learning environment-integrated learning strategy as an OL activity increased their motivation and improved their learning results significantly.[86] Students who took computer courses before attending online courses can be more satisfied with the online courses.[87] However, OL has a significant effect on dropout rates. Online students are more likely to drop-out than campus-based students.[88] It was argued that blended learning methods (e.g. emporium model) may not be as effective as in-person instruction in remedial math classes.[89] Graduate-level online courses (involving adult populations) might be better received than undergraduate-level ones.[90] There has been less evidence-based research on students' perceptions of the key aspects of online

---

[83] Renee Kaufmann, Deanna D. Sellnow, and Brandi N. Frisby, "The Development and Validation of the Online Learning Climate Scale (OLCS)," *Communication Education* 65, no. 3 (2016): 308.

[84] Mary K. Tallent-Runnels et al., "Teaching Courses Online: A Review of the Research," *Review of Educational Research* 76, no. 1 (Spring 2006): 93.

[85] Mete Akcaoglu and Lee, Eunbae, "Using Facebook Groups to Support Social Presence in Online Learning," *Distance Education 39, no.* 3 (2018): 334. doi: 10.1080/01587919.2018.1476842

[86] Qiusha Min, Zhifeng Wang, and Neng Liu, "Integrating a Cloud Learning Environment into English-Medium Instruction to Enhance Non-Native English-Speaking Students' Learning," *Innovations in Education and Teaching International* 56, no. 4 (2019): 493. doi:10.1080/14703297.2018.1483838

[87] Tallent-Runnels, "Teaching Courses Online," 93.

[88] Kember, Leung, and Prosser, "Has the Open Door," 8.

[89] Whitney Kozakowski, "Moving the Classroom to the Computer Lab: Can Online Learning with in-Person Support Improve Outcomes in Community Colleges?" *Economics of Education Review* 70, (2019): 170.

[90] Mirjeta S. Beqiri, Nancy M. Chase, and Atena Bishka, "Online Course Delivery: An Empirical Investigation of Factors Affecting Student Satisfaction," *Journal of Education for Business* 85, no. 2 (2009): 99.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

learning and the association between those aspects and students' learning experiences.[91]

Accordingly, taking null and alternate hypotheses (the H_a, H_b *and* H_c) development into account, the following hypotheses were constructed:

> *Null Hm: When self-directed learning added to the model as mediating variable, the correlation coefficient between university students' self-leadership and their online learning is zero.*
>
> *Alternate Hm: When self-directed learning added to the model as mediating variable, the correlation coefficient between university students' self-leadership and their online learning is significantly different from zero.*

It can be understood that SL as personal characteristics can cause SDL. That can be another reason for hypothesizing (H_m) SDL as a mediator in the relationship between SL and OL (Figure 2).

III. Methodology

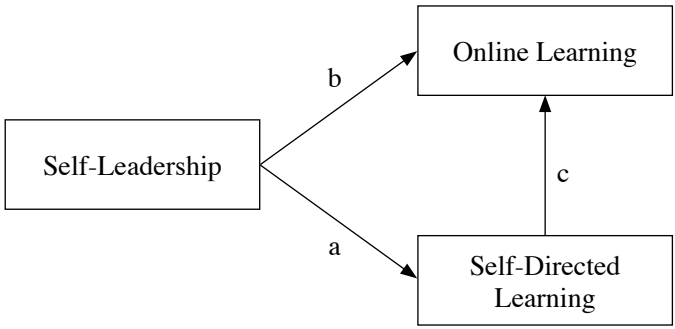

Figure 2
Theoretical research model

The study was designed in a relational survey model.[92] The theoretical research model as depicted in Figure 2, was tested with empirical evidence.

---

[91] Robert A. Ellis, Paul Ginns, and Leanne Piggott, "E-Learning in Higher Education: Some Key Aspects and Their Relationship to Approaches to Study," *Higher Education Research & Development* 28, no. 3 (2009): 303.

[92] Donna M Mertens, *Research and Evaluation in Education and Psychology: Integrating Diversity With Quantitative, Qualitative, and Mixed Methods* (California: Sage Publications, 2014).

Figure 2 indicates the hypothesized relationships (H_a, H_b, H_c) between SL, SDL and OL as perceived by university students and mediating role of SDL in the relationship between SL and OL.

III.1. *Participants*

The study was carried out in the Spring Semester of 2018-2019 Academic Year. The participants were 835 students from 54 state universities in Turkey and they had participated in an online learning activity before participating in the study. The universities and students were chosen randomly. They included 472 undergraduate (%56.5), 203 master's (%24.3) and 160 doctoral (%19.2) students. 592 of them were female (%70.9) and 243 were male (% 29.1). They were mainly from the disciplines including education and teacher training, law, management, architecture, agriculture, engineering, computer sciences, sports and physical education, religion, communication, and human resource management. Firstly, the permission to use three scales were obtained from the developers. The approval was taken from Zonguldak Bülent Ecevit University's Human Research Ethics Committee as well. Protocol number of the document is 891. The research was carried out not in specific institutions and so no institutions' names were given.

III.2. *Data collection tools*

Three scales in the type of 5-point Likert ranging from *"totally disagree"* to *"totally agree"* were employed. The Revised Self-Leadership Questionnaire (RSLQ) developed and validated by Houghton and Neck.[93] And it was adapted into Turkish by Fidan.[94] RSLQ is a three-dimensional scale consists of 35 items (e.g., *"I write specific goals for my own performance."*). Cronbach's Alpha reliability coefficient of the adapted scale overall was .96; it was .97 for the *"Behavior Focused (BF)"* dimension; .89 for the *"Natural Reward (NR)"* dimension and .95 for the *"Constructive Thought (CT)"* dimension. The reliability coefficient overall was .89; .76 for *BF* dimension; .60 for *NR* dimension and .83 for *CT* dimension for this study.

---

[93] Houghton and Neck, "The Revised Self-Leadership Questionnaire," 672-691.

[94] Fidan, Mustafa, "Yenilenen Öz-Liderlik Ölçeği'ni Üniversite Öğrencileri Örnekleminde Türkçe'ye Uyarlama Çalişmasi," *Uluslararası Liderlik Eğitimi Dergisi-International Journal of Leadership Training* 2, (2018): 1-16.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Online Learning Attitude Scale (OLAS) is developed and validated by Usta, Uysal and Okur.[95] It is a four-dimensional scale consists of 20 items (e.g., *"I feel comfortable in an OL environment."*). Cronbach's Alpha reliability coefficient of the scale overall was .91; it was .77 for the *"General Acceptance(GA)"* dimension; .85 for the *"Individual Awareness(IA)"* dimension; .79 for the *"Usefulness(U)"* dimension and .68 for the *"Participation Effectiveness(PE)"* dimension. The reliability coefficient overall was .89; .86 for *IA* dimension; .80 for *U* dimension; .63 for *GA* dimension and .68 for *PE* dimension for this study.

The Self-Directed Learning Scale (SDLS) developed and validated by Lounsbury, Levy, Park, Gibson, and Smith[96] as a personality trait, rather than learning readiness or an instructional method. And it was adapted into Turkish by Demircioğlu, Öge, Fuçular, Çevik, Nazlıgül and Özçelik[97] for determining individuals' self-directed learning. SDLS is a uni-dimensional scale consists of 10 items (e.g., *"I regularly learn things on my own outside of class."*). Cronbach's Alpha reliability coefficient of the adapted scale was .85 and it was .83 for this study. All in all, the reliability coefficients of the scales indicated that the scales can be interpreted as reliable[98] for this study. In addition, because the Turkish version of the tools had been previously validated, a local pilot study was not required.

III.3. *Data collection and analysis*

Data were collected via Google Forms containing scales items and related explanations. The participation in the survey was voluntary and it is about 10 minutes to answer all scales items. The public database of YÖK AKADEMİK (https://akademik.yok.gov.tr/AkademikArama/) was used to obtain participants e-mail addresses. Then, I have sent emails including the form link to those addresses. Furthermore, online platforms such as social media groups in which

---

[95] İlker Usta, Ömer Uysal, & Muhammet Recep Okur, "Online learning attitude scale: Development, validity and reliability," *Journal of International Social Research 9, no*. 43, (2016): 2215-22.

[96] Lounsbury, Levy, Park, Gibson, and Smith, "An Investigation of the Construct," 411-18.

[97] Zeynep Işıl Demircioğlu, Burak Öge, Emine Ezgi Fuçular, Tuğçe Çevik, Merve Denizci Nazlıgül, and Erol Özçelik, "Reliability, Validity and Turkish Adaptation of Self-Directed Learning Scale (SDLS)," *International Journal of Assessment Tools in Education* 5, no. 2, (2018): 235-47.

[98] Kultar Singh. *Quantitative Social Research Methods*. (New Delhi: Sage Publications, 2007).

university students participated and WhatsApp groups were used to reach participants. Nevertheless, after analyzing the missing data and outlier, the final dataset included 835 data. The skewness and kurtosis values of the SDLS overall were .13 and -.32 respectively. And they were .35 and .34 for OLAS overall; -.21 and -15 for *GA* dimension; .41 and .32 for *IA* dimension; -.27 and -.13 for *U* dimension and .10 and -.17 for *PE* dimension. And they were .38 and -.06 for RSLQ overall; .16 and .02 for *BF* dimension; .10 and -.14 for *NR* dimension and -.13 and -.51 for *CT* dimension. The skewness and kurtosis values for each of the three scales and their factors were between +1.96 and -1.96.[99] The findings indicated that the dataset met the normality assumption. 0.05 level of significance was used. Quantitative techniques (*descriptive (mean, standard deviation), correlation (Pearson coefficient), Confirmatory Factor Analysis (CFA), Structural Equation Modelling (SEM) (path analysis)*) were used to analyze the data. SPSS v. 23 and AMOS v. 23 were used.

Baron and Kenny[100,101] pointed out that:

> A variable functions as a mediator when it meets the following conditions:
> i) Variations in levels of the independent variable significantly account for variations in the presumed mediator *(i.e., path 'a' in Figure 2)*
> ii) Variations in the mediator significantly account for variations in the dependent variable *(i.e., path 'c' in Figure 2)*
> iii) When paths a and c are controlled, a previously significant relation between the independent and dependent variables is no longer significant, with the strongest demonstration of mediation occurring when path 'b' is zero…

Along with the condition 'iii' of Baron and Kenny, when the mediating variable is added to the model; if there is a nonsignificant relationship between independent variable and dependent variable, full mediation effect; if there is a decrease in the relationship between independent variable and dependent variable, it can be said that there is a partial mediation effect.[102] The bias-

[99] Andy Field, *Discovering statistics using IBM SPSS statistics* (Los Angeles: SAGE, 2009): 26,45

[100] Reuben M. Baron and David A. Kenny, "The Moderator-Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations," *Journal of Personality and Social Psychology* 51, no. 6 (1986): 1176.

[101] Xinshu Zhao, John G. Lynch, and Qimei Chen, "Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis," *Journal of Consumer Research* 37, no. 2 (2010): 198.

[102] Grayson N. Holmbeck, "Toward Terminological, Conceptual, and Statistical Clarity in the Study of Mediators and Moderators: Examples from the Child-Clinical and Pediatric Psychology Literatures," *Journal of Consulting and Clinical Psychology* 65, no. 4 (1997): 600.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

corrected bootstrapped confidence intervals were used for indirect effects. For descriptive interpretation of five-point Likert type scales, 1.00-1.80 interval was interpreted as "totally disagree"; 1.81-2.60 as "disagree"; 2.61-3.40 as "moderate"; 3.41-4.20 as "agree" and 4.21-5.00 as "totally agree". As indicated by Russo,[103] the correlation coefficients between .10-.29 point out a weak correlation; .30-.49 a moderate correlation and above .50 a strong correlation.

IV. Results

This study investigated the SDL, SL, and OL as perceived by university students. That is, null and alternate hypotheses were tested. Table 1 shows whether or not there is statistically a significant difference between the mean scores of scales and factors according to gender variable (*t*-test).

Table 1

t-test Results for the Scales and Factors According to Gender Variable

Scales/Factors	Female N:592		Male N:243		t	p
	M	SD	M	SD		
1 RSLQ*	3.89	0.32	3.86	0.33	1.02	0.31
2 BF	3.70	0.33	3.67	0.35	1.20	0.23
3 NR	4.09	0.45	4.08	0.43	0.30	0.77
4 CT	4.08	0.46	4.06	0.46	0.30	0.76
5 SDLS*	4.17	0.39	4.19	0.41	0.67	0.50
6 OLAS*	3.28	0.56	3.30	0.58	-0.56	0.58
7 GA	3.41	0.55	3.45	0.53	-0.60	0.55
8 IA	2.85	0.80	2.82	0.83	-0.59	0.55
9 U	3.65	0.73	3.73	0.72	-0.96	0.34
10 *PE*	3.42	0.71	3.46	0.71	0.49	0.62

p<.05; N=835;* **1. RSLQ: Revised Self-Leadership Questionnaire; *2. BF: Behavior Focused; 3. NR: Natural Reward; 4. CT: Constructive Thought;* **5. SDLS**: Self-Directed Learning Scale; **6. OLAS**: Online Learning Attitude Scale; *7. GA: General Acceptance; 8. IA: Individual Awareness; 9. U: Usefulness; 10. PE: Participation Effectiveness.*

[103] Riccardo Russo. *Statistics for the Behavioral Sciences: An Introduction* (Taylor & Francis e-Library, 2004):118,184

There is no statistically significant difference regarding mean scores of all scales and factors in terms of gender variable (p>.05). Female students' score of SL (M=3.89, SD = .32) was slightly higher than male's while male students' score of SDL (M=4.19, SD = .41) and OL (M=3.30, SD = .58) were slightly higher than female's.

Table 2 shows whether or not there is statistically a significant difference between the mean scores of scales and factors according to level of education variable (ANOVA test).

Table 2

ANOVA Test Results for the Scales and Factors According to Level of Education Variable

Scales/ Factors	A) Undergraduate N:472		B) Graduate N:203		C) Postgraduate N:160		F	p	Significant Difference
	M	SD	M	SD	M	SD			
1 RSLQ*	3.87	0.32	3.86	0.34	3.93	0.32	2.68	0.07	-
2 BF	3.67	0.33	3.67	0.35	3.74	0.31	2.86	0.06	-
3 NR	4.08	0.43	4.08	0.46	4.12	0.45	0.48	0.62	-
4 CT	4.07	0.45	4.04	0.50	4.13	0.43	1.74	0.18	-
5 SDLS*	4.13	0.39	4.17	0.39	4.29	0.40	8.80	0.00*	A-C, B-C
6 OLAS*	3.27	0.56	3.32	0.56	3.29	0.60	0.66	0.52	-
7 GA	3.40	0.55	3.45	0.54	3.44	0.56	0.97	0.38	-
8 IA	2.83	0.79	2.85	0.82	2.86	0.84	0.14	0.87	-
9 U	3.66	0.73	3.73	0.74	3.65	0.73	0.79	0.45	-
10 *PE*	3.41	0.68	3.49	0.74	3.41	0.75	0.92	0.40	-

**p<.05, Scheffe was used to determine the significant difference between groups of education level.*

It was determined that there was statistically significant difference (F=8.8; p<.05) between mean scores of SDL with regard to level of education variable. That is, postgraduate students (M=4.29, SD = .40) have higher SDL scores than undergraduate (M=4.13, SD = .39) and graduate (M=4.17, SD = .39).

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Table 3 shows the means, standard deviations and correlation coefficients' values between the variables.

Table 3

The Mean, Standard Deviation and Correlation Coefficient Values

Scales/ Factors	M	SD	1	2	3	4	5	6	7	8	9	10
1 RSLQ*	3.88	0.32	1									
2 BF	3.69	0.33	.84**	1								
3 NR	4.09	0.44	.75**	.52**	1							
4 CT	4.08	0.46	.83**	.43**	.56**	1						
5 SDLS*	4.17	0.40	**.44****	.41**	.33**	.32**	1					
6 OLAS*	3.28	0.57	**.15****	.16**	.13**	.09*	**.19****	1				
7 GA	3.42	0.55	.11**	.13**	.07*	.06	.19**	.85**	1			
8 IA	2.84	0.81	.14**	.14**	.10**	.09*	.15**	.91**	.70**	1		
9 U	3.67	0.73	.10**	.11**	.09*	.06	.16**	.73**	.53**	.57**	1	
10 *PE*	3.43	0.71	.14**	.14**	.16**	.08*	.13**	.73**	.46**	.54**	.49**	1

***p<.01; *p<.05; N=835;* **1. RSLQ**: Revised Self-Leadership Questionnaire; *2. BF: Behavior Focused; 3. NR: Natural Reward; 4. CT: Constructive Thought;* **5. SDLS**: Self-Directed Learning Scale; **6. OLAS**: Online Learning Attitude Scale; *7. GA: General Acceptance; 8. IA: Individual Awareness; 9. U: Usefulness; 10. PE: Participation Effectiveness.*

Students' perception of SL (M=3.88, SD = .32) and SDL (M=4.17, SD = .40) might be interpreted as "*agree*" and OL (M=3.28, SD = .57) might be interpreted as "*moderate*". There was a positive and "*moderate*" correlation between SL and SDL (r=.44; p<.01); a positive and "weak" correlation between SDL and OL (r=.19; p<.01) and between SL and OL (r=.15; p<. 01). These results rejected the null H_a, H_b, *and* H_c hypotheses in favor of alternate H_a, H_b, *and* H_c hypotheses.

 ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Table 4

Direct Effects of the Variables and Structural Routes before Adding Mediator Variable

	Independent variable	Structural Paths	Dependent variable	β
Direct effect	SL	→	OL	.17***
	SL	→	SDL	.52***
	SDL	→	OL	.22***

****p<.001; N=835*

Direct effects among the variables are presented in Table 4. Before adding the SDL variable to the model as a mediator variable, direct effects between variables were analyzed. Table 4 shows that the SL predicted OL (β =.17; p<.001) and SDL (β =.52; p<.001). The SDL predicted OL (β =.22; p<.001).

Table 5

Effects of the Variables and Structural Routes after Adding Mediator Variable

	Independent variable	Structural Paths	Dependent variable	β
Direct effect	SL	→	OL	.08
	SL	→	SDL	.52**
	SDL	→	OL	.18**
Indirect effect	SL	→	OL	.045*
Total effect	SL	→	OL	.175*

***p<.001; *p<.05; N=835*

As shown in Table 4, Table 5 and Figure 3, the standardized regression coefficients between SL and OL decreased significantly while SDL and OL decreased when SDL was added to the model as a mediator variable. The nonsignificant relationship between SL and OL indicates that SDL played a full partial mediating role in the relationship between SL and OL.[104] The SL

[104] Holmbeck, "Toward Terminological, Conceptual," 600.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

predicted SDL (β =.52; p<.001) and OL (β =.18; p<.001). On the other hand, SL predicted OL in the indirect (β =.045; p<.05) and total effect (β =.175; p<.001). The regression coefficient values proved that the assumption of the model was satisfied. Figure 3 indicates visually the path model which proved a full mediating role of SDL in the relationship between SL and OL as well. These results rejected null H_m hypothesis and confirmed the alternate H_m hypothesis.

Figure 3 shows the standardized regression coefficients for the relationship between SL and OL as mediated by SDL. The goodness of fit values for the model are as follows: [$\chi 2$ = 503.9, df = 116, $\chi 2$ / df = 4.34, the Root Mean Square Error of Approximation (RMSEA) = .06, the Incremental Fit Index (IFI) = .90, the Comparative Fit Index (CFI) = .90, Standardized Root Mean Square Residual (SRMR) =.05; Root Mean Square Residual (RMR) =.02; Goodness Fit Index (GFI) =.93, Adjusted Goodness of Fit Index (AGFI) =. 91]. These values indicate that the path model in the conceptual model (Figure 2 and Figure 3) fit the data well.[105,106,107,108] This model confirms that SL has a direct and indirect effect on OL, even if the effect reduced slightly (from .170 to .045) when adding SDL to the model as a mediator.

[105] David A. Cole, "Utility of Confirmatory Factor Analysis in Test Validation Research," *Journal of Consulting and Clinical Psychology* 55, no. 4 (1987): 585,586.

[106] Li-Tze Hu and Peter M. Bentler, "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives," *Structural Equation Modeling: A Multidisciplinary Journal* 6, no. 1 (1999):1.

[107] George A. Marcoulides and Randall E. Schumacker (eds), *New Developments and Techniques in Structural Equation Modeling* (Londra: Lawrence Erbaum Associates Publishers, 2001).

[108] Rex B Kline, *Principles and Practice of Structural Equation Modeling* (New York: Guilford Publications, 2015).

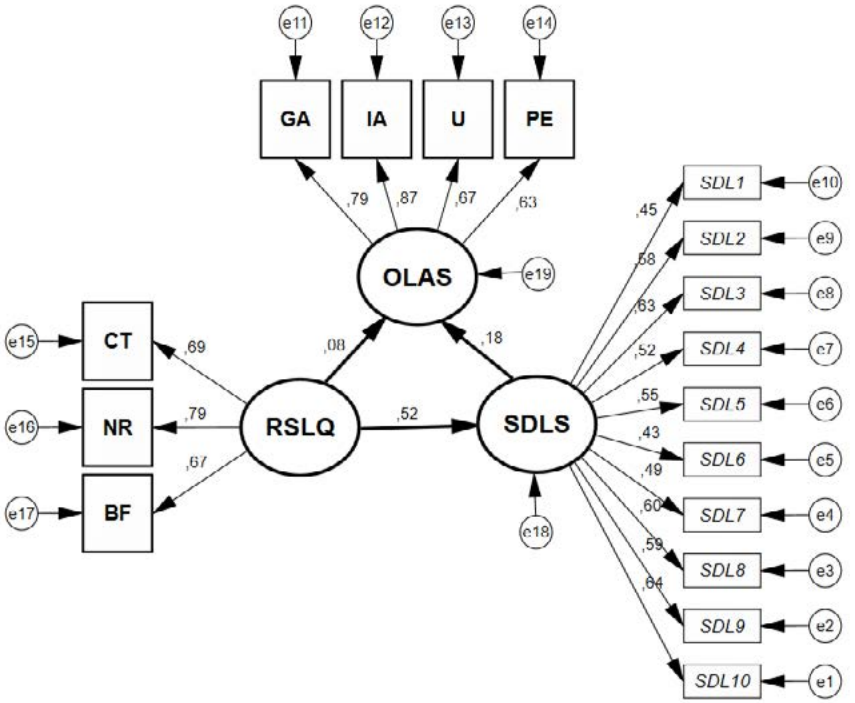

Figure 3
The path model

V. Discussion

This study examined the SL, SDL, and OL as perceived by university students. The results rejected null hypotheses (H_a, H_b, H_c, *and* H_m) and confirmed alternate hypotheses (H_a, H_b, H_c, *and* H_m) as shown in Table 6. The results showed a positive moderate correlation between SL and SDL, indicating that the higher the SL, the more the SDL and vice versa. This is in line with prior studies.[109],[110] Lee and Kim[111] found that SL and SDL readiness

[109] James, "Self-leadership and Self-Regulated Learning," 59.

[110] Lee and Kim, "The Effects of Self-Efficacy and Self-Directed Learning Readiness," 309,184.

[111] Lee and Kim, "The Effects of Self-Efficacy and Self-Directed Learning Readiness," 309,184.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

are correlated significantly. Eckton and Palfreyman[112] emphasized that the cognitive level of students could be advanced as improving SDL through making assignments active and flexible. The advanced cognitive level means students can improve success and overall SL by being equipped with knowledge and skills. James[113] emphasized that students and professionals may better learn SL first before learning SDL. Students that have a higher perception of self-leadership are expected to control their inner and outer behavior and so they are disciplined easily for self-directed learning. That can result in better online learning. Correspondingly, Okabayashi and Torrance[114] found that gifted students had a higher level of SDL.

Table 6

Hypotheses and Results

Hypotheses	Results
Null H_a: The correlation coefficient between university students' self-leadership and their self-directed learning is zero.	*Rejected*
Alternate H_a: The correlation coefficient between university students' self-leadership and their self-directed learning is significantly different from zero.	*Supported*
Null H_b: The correlation coefficient between university students' self-leadership and their online learning is zero.	*Rejected*
Alternate H_b: The correlation coefficient between university students' self-leadership and their online learning is significantly different from zero.	*Supported*
Null H_c: The correlation coefficient between university students' self-directed learning and their online learning is zero.	*Rejected*
Alternate H_c: The correlation coefficient between university students' self-directed learning and their online learning is significantly different from zero.	*Supported*

[112] Darin R. Eckton and S. Rhett Palfreyman,"Self-Directed Learning as a Form of Self-Leadership: An Exploratory Study in a First-Year Experience Student Success Course," *The Journal of Student Leadership 1*, no.2 (2017): 25.

[113] James, "Self-leadership and Self-Regulated Learning," 59.

[114] Haruo Okabayashi and E. Paul Torrance, "Role of Style of Learning and Thinking and Self-Directed Learning Readiness in the Achievement of Gifted Students," *Journal of Learning Disabilities* 17, no. 2 (1984): 106.

© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Hypotheses	Results
Null H_m: When self-directed learning added to the model as mediating variable, the correlation coefficient between university students' self-leadership and their online learning is zero.	*Rejected*
Alternate H_m: When self-directed learning added to the model as mediating variable, the correlation coefficient between university students' self-leadership and their online learning is significantly different from zero.	*Supported*

The results showed a positive and low correlation between SDL and OL, indicating that the higher the SDL, the more the OL. This is in line with the prior study of Chou.[115] He found that there is a positive relationship between engineering students' SDL abilities and OL performances. Broadbent and Poon[116] reviewed the literature and concluded that self-regulated learning strategies of time management, metacognition, critical thinking, and effort regulation were found to have significant positive correlations with academic success in online settings.

The results showed a positive and low correlation between SL and OL, suggesting that the higher the SDL, the more the OL. Du, Fan, Xu, Wang, Sun and Liu[117] found that perceived leadership was correlated to online groupwork self-efficacy positively suggesting that a leader in groupwork plays an important role in improving and sustaining self-efficacy of group members. Aldholay et al.[118] found that transformational leadership has a substantial positive effect on students' inspiration, motivation and actual usage of OL.

After adding the SDL variable to the model as a mediator variable, SDL has played a full mediating role in the relationship between SL and OL. Before and after adding the SDL variable to the model as a mediator

[115] Pao-Nan Chou, "Effect of Students' Self-Directed Learning Abilities on Online Learning Outcomes: Two Exploratory Experiments in Electronic Engineering," *International Journal of Humanities and Social Science* 2, no. 6 (2012): 172.

[116] Jaclyn Broadbent and Water l. Poon, "Self-Regulated Learning Strategies & Academic Achievement in Online Higher Education Learning Environments: A Systematic Review," *The Internet and Higher Education* 27 (2015): 11,12.

[117] Jianxia Du, Xitao Fan, Jianzhong Xu, Chuang Wang, Li Sun, and Fangtong Liu, "Predictors for Students' Self-Efficacy in Online Collaborative Groupwork," *Educational Technology Research and Development* 67, no. 4 (2019): 785.

[118] Aldholay, Isaac, Abdullah, and Ramayah, "The Role of Transformational Leadership," 1421.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

variable, SL predicted SDL. It is supposed that the higher levels of SL among university students will predict greater SDL. This is in line with the prior study of Lee and Kim.[119] They found that SL readiness is a significant predictor of SDL. However, after adding the SDL variable to the model, SL did not predict OL significantly, but SL predicted OL indirectly. It is proved that the higher levels of SL among university students will predict greater OL.

Furthermore, participants' SL total scores were at a high level. It can be inferred that the participants mostly use their imagination to picture their performing well on significant responsibilities; visualize themselves successfully performing a task before they do it; set specific goals for their own performance and work toward these goals. This result was similar to other research results (e.g., Eun-Joo and Han-Suk,[120] Ay, Karakaya, and Yilmaz,[121] Kim[122]). For example, Eun-Joo and Han-Suk[123] reported that the total score of self-leadership were at a high level among physical therapy students. Ay, Karakaya, and Yilmaz[124] shared that literature and faculty of science senior evening education students' total score of self-leadership was at a high level as well.

Participants' SDL total scores were at a high level. This result was in line with the prior studies of Chou [125] and Geng, Law, and Niu.[126] Geng, Law, and Niu[127] reported that the total score of SDL was at a high level among engineering students from a university in Hong Kong. For this study, high scores on the scale represent that participants have good personality traits of a self-directed learner. It can be stated that the participants learn somethings regularly on their own outside of campus; they view self-directed learning very important for their success in university and they set their own goals for what they will learn.

---

[119] Lee and Kim, "The Effects of Self-Efficacy and Self-Directed Learning Readiness," 309.

[120] Kim Eun-Joo and Han-Suk, Lee. "Analyzing Correlation of Self-leadership and Intrinsic Motivation among Some Physiotherapy Students," *Journal of Korean Society of Physical Medicine* 12, no 1(2017): 113. doi:10.13066/kspm.2017.12.1.113

[121] Ferda Alper Ay, Abdullah Karakaya, and Kasım Yilmaz. "Relations between self-leadership and critical thinking skills," *Procedia-social and Behavioral sciences* 207 (2015): 29.

[122] Myoung Sook Kim. "Influence of Metacognition and Emotional Intelligence on Self-leadership in Nursing Students," *Journal of Korean Academy of Nursing Administration* 25, no 2 (2019): 146. Doi: 10.11111/jkana.2019.25.2.146

[123] Eun-Joo and Han-Suk, "Analyzing Correlation of Self-leadership," 13

[124] Ay, Karakaya, and Yilmaz, "Relations between self-leadership," 36.

[125] Chou, "Effect of Students' Self-Directed," 172.

[126] Geng, Law, and Niu, "Investigating Self-Directed Learning," 13.

[127] Geng, Law, and Niu, "Investigating Self-Directed Learning," 13.

Participants' OL total scores were at a moderate level. However, this result was not consistent with the result gathered by Isaaca, Aldholay, Abdullah, and Ramayah[128] and Mohammed, Abou-Alam, Belal and Fahmi.[129] This difference may be due to the different scales used. Isaaca, Aldholay, Abdullah, and Ramayah[130] found that total scores on OL of students from nine public universities within Yemen were at a high level. For this study, moderate scores in the scale indicate that participants have a moderate attitude towards online learning.

Both female and male participants' total scores on SL (BF, NR, CT) and SDL were at a high level while their mean scores on OL (GA, IA, U, PE) were moderate levels. In other words, their mean scores on scales and scales' sub-dimensions were very close to each other. This result can be interpreted as an indication that the SDL, SL and OL constructs covers the learning enthusiasm of both male and female university students. On the other hand, specifically, the result for OL was not similar to the result gathered by Beqiri, Chase, and Bishka[131] They reported that degrees and courses that attract particularly male students are promising for online education delivery. In another study, Tekkol and Demirel[132] reported that female undergraduate students' total scores on the perception of SDL were significantly higher than males.

Undergraduate, graduate, and postgraduate participants' total scores on SL (BF, NR, CT) and SDL were at a high level while their mean scores on OL (GA, IA, U, PE) were moderate levels. There were statistically significant differences between postgraduate and undergraduate, and postgraduate and graduate participants' total scores on SDL. That is to say, postgraduate participants' total scores on SDL were higher than undergraduate and graduate. Highest SDL scores in postgraduate participants might be attributed to the fact that the postgraduate level of education requires students equipped with the skills necessary to establish learning outcomes more through SDL.

---

[128] Osama Isaaca, Adnan Aldholay, Zaini Abdullah, and T. Ramayah, "Online learning usage within Yemeni higher education: The role of compatibility and task-technology fit as mediating variables in the IS success model," *Computers & Education* 136 (2019): 119. doi:10.1016/j.compedu.2019.02.012

[129] Mohammed I. Eraqi, Wesal Abou-Alam, Mayadah Belal and Toka Fahmi, "Attitudes of Undergraduate Students Toward E-Learning in Tourism: The Case of Egypt," *Journal of Teaching in Travel & Tourism* 11, no 4 (2011): 325. doi:10.1080/15313220.2011.624397

[130] Isaaca, Aldholay, Abdullah, and Ramayah, "Online learning usage," 119

[131] Beqiri, Chase, and Bishka, "Online Course Delivery," 99.

[132] İlkay Aşkin Tekkol and Melek Demirel. "An investigation of self-directed learning skills of undergraduate students." *Frontiers in Psychology* 9 (2018): 2324. doi: 10.3389/fpsyg.2018.02324.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

VI. Conclusion

This study investigated the SL, SDL and OL among university students in Turkey. It tested a distinctive conceptual model, composed of SL, SDL and OL through utilizing descriptive, CFA, correlation and SEM techniques on empirical data of 835 students. The findings provided evidence and confirmed the model for the study. The structural models revealed that self-directed learning has very critical roles in the relationship between self-leadership and online learning among university students. It is a fact that accessing educational and instructional knowledge and data is getting easier and cheaper every day for the learners from all socio-cultural levels thanks to the advent of educational technologies and new educational entrepreneurship models. Thus, online learning and teaching are developing and becoming widespread. In this context, this study shows that SL and SDL skills are important for university students to benefit from this learning style at a high level. This study has contributed to the expansion efforts of the studies carried out on improvements in university students learning.

VII. Limitations, implications, and research directions

The key strength of this study is that it tested a conceptual model through utilizing some mostly used statistic techniques (e.g. SEM) on empirical data of 835 students. Despite its strengths, this study is limited to the date of the data collection, data, perception and status of university students studying in 54 universities of Turkey in the Spring Semester of 2018-2019 Academic Year. A descriptive relational survey model and the scales used could be a delimitation. There may be other scales already developed or can be developed for the concepts handled in this study.

Higher education organizations can benefit from knowledge provided by this study for their practical and accurate higher education policies on administrating, supervising, and planning. For example, one of the implications of this study is that universities in Turkey, especially providing OL, can focus on establishing educational policies to improve their students' SL and SDL. The education policies can be developed and taken place both inside and outside Turkey in the context of the following account.

University administrations (especially online education providers) can highlight the importance of SL and SDL concepts, especially regarding the realization of online learning objectives, in various policy documents of their universities (basic policy documents, curriculum development strategic plan,

faculty member and student supervising plan, etc.). Universities that provide online education especially in the Covid-19 period can do the necessary work to keep these issues on their agenda as one of their priority strategic issues. In other words, they can include OL, SL, and SDL subjects and the importance of the relationship between them in the university's official correspondence networks, as a statement on its websites, in student guidance activities, in orientation or educational activities related to the distance education they provide. The content of the teaching\learning theories taught in education faculties can be expanded in the context of the theoretical framework of OL, SL, and SDL concepts and the relationship between them. Furthermore, universities that will use online educational software/platforms can develop a policy action plan for using software supported by SL and SDL theories.

Last but not the least, university administrations can develop active policy plans to ensure that faculty members (especially working in distance education faculties) are aware of the theoretical framework of these concepts and learn how they can teach students to be aware of the theoretical frameworks of these concepts. These plans can include organizing and supervising various in-service activities such as seminars and courses.

It can be clearly foreseen that there may be relations and predicting cases between the subjects discussed in this study and other cases such as self-efficiency and academic success of students. These relationship situations and predicting cases would be studied in future studies with using some other methods (e.g. mixed) and different scales with restructured factors of explanatory potential.

Bibliography

Akcaoglu, Mete, and Lee, Eunbae. "Using Facebook Groups to Support Social Presence in Online Learning." *Distance Education 39,* no. 3 (2018): 334-352. doi: 10.1080/01587919.2018.1476842

Aldholay, Adnan H., Osama Isaac, Zaini Abdullah, and T. Ramayah. "The Role of Transformational Leadership as a Mediating Variable in DeLone and McLean Information System Success Model: The Context of Online Learning Usage in Yemen." *Telematics and Informatics* 35, no. 5 (2018): 1421–37. https://doi.org/10.1016/j.tele.2018.03.012.

Anderson, Joe S., and Gregory E. Prussia. "The Self-Leadership Questionnaire: Preliminary Assessment of Construct Validity." *Journal of Leadership Studies* 4, no. 2 (1997): 119–43. https://doi.org/10.1177/107179199700400212.

Ay, Ferda Alper, Abdullah Karakaya, and Kasım Yilmaz. "Relations between self-leadership and critical thinking skills." *Procedia-social and Behavioral sciences* 207 (2015): 29-41.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Bahçelerli, Nesrin, Tulen Saner, Zehra Altinay, Ebba Ossiannilsson, and Fahriye Altinay. "The Impact of Online Learning Context in Fostering Open Leadership Skills." *Proceedings of the 9th International Conference on Computer Supported Education*, 2017. https://doi.org/10.5220/0006387107360741.

Baron, Reuben M., and David A. Kenny. "The Moderator–Mediator Variable Distinction in Social Psychological Research: Conceptual, Strategic, and Statistical Considerations." *Journal of Personality and Social Psychology* 51, no. 6 (1986): 1173–82. https://doi.org/10.1037/0022-3514.51.6.1173.

Beqiri, Mirjeta S., Nancy M. Chase, and Atena Bishka. "Online Course Delivery: An Empirical Investigation of Factors Affecting Student Satisfaction." *Journal of Education for Business* 85, no. 2 (2009): 95–100. https://doi.org/10.1080/08832320903258527.

Bhagat, Kaushal Kumar, Leon Yufeng Wu, and Chang Chun-Yen. "Development and Validation of the Perception of Students towards Online Learning (POSTOL)." *Journal of Educational Technology & Society* 19, no. 1 (2016): 350-359.

Broadbent, Jaclyn, and Water l. Poon. "Self-Regulated Learning Strategies & Academic Achievement in Online Higher Education Learning Environments: A Systematic Review." *The Internet and Higher Education* 27 (2015): 1–13. https://doi.org/10.1016/j.iheduc.2015.04.007.

Brockett, Ralph. "Self-directed learning and the hard-to-reach adult." *Lifelong Learning: The Adult Years 6,* no *8* (1983): 16-18.

Chou, Pao-Nan. "Effect of Students' Self-Directed Learning Abilities on Online Learning Outcomes: Two Exploratory Experiments in Electronic Engineering." *International Journal of Humanities and Social Science* 2, no. 6 (2012): 172-179.

Clark, Ruth Colvin, and Richard E. Mayer. *E-Learning and the Science of Instruction: Proven Guidelines for Consumers and Designers of Multimedia Learning*. San Francisco: Pfeiffer, 2016.

Cole, David A. "Utility of Confirmatory Factor Analysis in Test Validation Research." *Journal of Consulting and Clinical Psychology* 55, no. 4 (1987): 584–94. https://doi.org/10.1037/0022-006x.55.4.584.

Demircioğlu, Zeynep Işıl, Burak Öge, Emine Ezgi Fuçular, Tuğçe Çevik, Merve Denizci Nazlıgül, and Erol Özçelik. "Reliability, Validity and Turkish Adaptation of Self-Directed Learning Scale (SDLS)." *International Journal of Assessment Tools in Education* 5, no. 2, (2018): 235-47. https://doi.org/10.21449/ijate.401069.

Du, Jianxia, Xitao Fan, Jianzhong Xu, Chuang Wang, Li Sun, and Fangtong Liu. "Predictors for Students' Self-Efficacy in Online Collaborative Groupwork." *Educational Technology Research and Development* 67, no. 4 (2019): 767–91. https://doi.org/10.1007/s11423-018-9631-9.

Eckton, Darin R., and S. Rhett Palfreyman. "Self-Directed Learning as a Form of Self-Leadership: An Exploratory Study in a First-Year Experience Student Success Course." *The Journal of Student Leadership 1*, no. 2 (2017): 15-29.

Ellis, Robert A., Paul Ginns, and Leanne Piggott. "E-Learning in Higher Education: Some Key Aspects and Their Relationship to Approaches to Study." *Higher*

Education Research & Development 28, no. 3 (2009): 303-18. https://doi.org/10.1080/07294360902839909.

Eraqi, Mohammed I., Wesal Abou-Alam, Mayadah Belal and Toka Fahmi. "Attitudes of Undergraduate Students Toward E-Learning in Tourism: The Case of Egypt." *Journal of Teaching in Travel & Tourism* 11, no 4 (2011): 325-348. doi:10.1080/15313220.2011.624397

Eun-Joo, Kim, and Han-Suk, Lee. "Analyzing Correlation of Self-leadership and Intrinsic Motivation among Some Physiotherapy Students." *Journal of Korean Society of Physical Medicine* 12, no 1 (2017): 113-120. doi:10.13066/kspm.2017.12.1.113

Fidan, Mustafa. "Yenilenen Öz-Liderlik Ölçeği'ni Üniversite Öğrencileri Örnekleminde Türkçe'ye Uyarlama Çalişmasi." *Uluslararası Liderlik Eğitimi Dergisi-International Journal of Leadership Training* 2, (2018): 1-16.

Field, Andy. *Discovering statistics using IBM SPSS statistics*. Los Angeles: SAGE, 2009.

Garnjost, Petra, and Leanna Lawter. "Undergraduates' Satisfaction and Perceptions of Learning Outcomes across Teacher- and Learner-Focused Pedagogies." *The International Journal of Management Education* 17, no. 2 (2019): 267–75. https://doi.org/10.1016/j.ijme.2019.03.004.

Garrison, D. Randy "Self-Directed Learning: Toward a Comprehensive Model." *Adult Education Quarterly* 48, no. 1 (1997): 18-33. https://doi.org/10.1177/074171369704800103.

Garrison, D. Randy. "Self-Directed Learning and Distance Education." In *Handbook of Distance Education*. Mahwah, NJ: Lawrence Erlbaum, 2003.

Geng, Shuang, Kris M. Y. Law, and Ben Niu. "Investigating Self-Directed Learning and Technology Readiness in Blending Learning Environment." *International Journal of Educational Technology in Higher Education* 16, no. 1 (2019):1-22. https://doi.org/10.1186/s41239-019-0147-0.

Gomez, Doris. "Leadership behavior and its impact on student success and retention in online graduate education." *Academy of Educational Leadership Journal* 17, no.2 (2013): 13-37.

Holmbeck, Grayson N. "Toward Terminological, Conceptual, and Statistical Clarity in the Study of Mediators and Moderators: Examples from the Child-Clinical and Pediatric Psychology Literatures." *Journal of Consulting and Clinical Psychology* 65, no. 4 (1997): 599-610. https://doi.org/10.1037/0022-006x.65.4.599.

Houghton, Jeffery D., and Christopher P. Neck. "The Revised Self-Leadership Questionnaire." *Journal of Managerial Psychology* 17, no. 8 (2002): 672–91. https://doi.org/10.1108/02683940210450484.

Houghton, Jeffery D., Andrew Carnes, and Christopher N. Ellison. "A Cross-Cultural Examination of Self-Leadership." *Journal of Leadership & Organizational Studies* 21, no. 4 (2014): 414–30. https://doi.org/10.1177/1548051813515753.

Houlden, Shandell, and George Veletsianos. "A Posthumanist Critique of Flexible Online Learning and Its 'Anytime Anyplace' Claims." *British Journal of Educational Technology* 50, no. 3 (2019): 1005–18. https://doi.org/10.1111/bjet.12779.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Hsieh, Peggy (Pei-Hsuan), Jeremy R. Sullivan, and Norma S. Guerra. "A Closer Look at College Students: Self-Efficacy and Goal Orientation." *Journal of Advanced Academics* 18, no. 3 (2007): 454–76. https://doi.org/10.4219/jaa-2007-500.

Hsu, Hui-Ching Kayla, Cong Vivi Wang, and Chantal Levesque-Bristol. "Reexamining the Impact of Self-Determination Theory on Learning Outcomes in the Online Learning Environment." *Education and Information Technologies* 24, no. 3 (2019): 2159–74. https://doi.org/10.1007/s10639-019-09863-w.

Hsu, Ting-Chia. "Learning English with Augmented Reality: Do Learning Styles Matter?" *Computers & Education* 106, (2017): 137–49. https://doi.org/10.1016/j.compedu.2016.12.007.

Hsu, Yu-Chiung, and Ya-Ming Shiue. "The Effect of Self-Directed Learning Readiness on Achievement Comparing Face-To-Face and Two-Way Distance Learning Instruction." *International Journal of Instructional Media* 32, no. 2 (2005): 143-156.

Hu, Li-Tze, and Peter M. Bentler. "Cutoff Criteria for Fit Indexes in Covariance Structure Analysis: Conventional Criteria versus New Alternatives." *Structural Equation Modeling: A Multidisciplinary Journal* 6, no. 1 (1999): 1-55. https://doi.org/10.1080/10705519909540118.

Ilgaz, Hale, and Yasemin Gülbahar. "A Snapshot of Online Learners: e-Readiness, e-Satisfaction and Expectations." *The International Review of Research in Open and Distributed Learning* 16, no. 2 (2015): 171-187. https://doi.org/10.19173/irrodl.v16i2.2117.

Isaaca, Osama, Adnan Aldholay, Zaini Abdullah, and T. Ramayah. "Online learning usage within Yemeni higher education: The role of compatibility and task-technology fit as mediating variables in the IS success model." *Computers & Education* 136 (2019): 113-129. Doi:10.1016/j.compedu.2019.02.012

James, Angela M. "Self-leadership and Self-Regulated Learning: An Investigation of Theoretical Relationships." *Journal of Business & Leadership: Research, Practice, and Teaching (2005-2012)* 5, no. 1 (2009): 59-67.

Kaufmann, Renee, Deanna D. Sellnow, and Brandi N. Frisby. "The Development and Validation of the Online Learning Climate Scale (OLCS)." *Communication Education* 65, no. 3 (2016): 307–21. https://doi.org/10.1080/03634523.2015.1101778.

Kember, David, Doris Leung, and Michael Prosser. "Has the Open Door Become a Revolving Door? The Impact on Attrition of Moving from Elite to Mass Higher Education." *Studies in Higher Education*, (2019): 1–12. https://doi.org/10.1080/03075079.2019.1629411.

Kim, Myoung Sook. "Influence of Metacognition and Emotional Intelligence on Self-leadership in Nursing Students." *Journal of Korean Academy of Nursing Administration* 25, no 2 (2019): 146-155. https://doi.org/10.11111/jkana.2019.25.2.146

Kline, Rex B. *Principles and Practice of Structural Equation Modeling*. New York: Guilford Publications, 2015.

Knowles, Malcolm S. *Self-Directed learning: A Guide for Learners and Teachers*. Chicago: Association Press, 1975.

Kozakowski, Whitney. "Moving the Classroom to the Computer Lab: Can Online Learning with in-Person Support Improve Outcomes in Community Colleges?" *Economics of Education Review* 70, (2019): 159–72. https://doi.org/10.1016/j.econedurev.2019.03.004.

Kraut, Rebecca, ed. *Policy guidelines for mobile learning*. UNESCO, 2013. Retrieved from https://unesdoc.unesco.org/ark:/48223/pf0000219641

Lee, Cynthia, Alexander Seeshing Yeung, and Tiffany Ip. "University English Language Learners Readiness to Use Computer Technology for Self-Directed Learning." *System* 67, (2017): 99–110. https://doi.org/10.1016/j.system.2017.05.001.

Lee, Sun-Young, and Yun-Young Kim. "The Effects of Self-Efficacy and Self-Directed Learning Readiness to Self-Leadership of Nursing Student." *Journal of Digital Convergence* 14, no. 3 (2016): 309–18. https://doi.org/10.14400/jdc.2016.14.3.309.

Long, Huey B. "Resources Related to Overcoming Resistance to Self-Direction in Learning." *New Directions for Adult and Continuing Education* 1994, no. 64 (1994): 13–21. https://doi.org/10.1002/ace.36719946404.

Lounsbury, John W., Jacob J. Levy, Soo-Hee Park, Lucy W. Gibson, and Ryan Smith. "An Investigation of the Construct Validity of the Personality Trait of Self-Directed Learning." *Learning and Individual Differences* 19, no. 4 (2009): 411–18. https://doi.org/10.1016/j.lindif.2009.03.001.

Manz, Charles C. "Self-leadership... the Heart of Empowerment." *The Journal for Quality and Participation* 15, no. 4 (1992): 80-85.

Manz, Charles C. "Self-Leadership: Toward an Expanded Theory of Self-Influence Processes in Organizations." *The Academy of Management Review* 11, no. 3 (1986): 585-600. https://doi.org/10.2307/258312.

Manz, Charles C. "Taking the Self-Leadership High Road: Smooth Surface or Potholes Ahead?" *Academy of Management Perspectives* 29, no. 1 (2015): 132-51. https://doi.org/10.5465/amp.2013.0060.

Marcoulides, George A., and Randall E. Schumacker (eds). *New Developments and Techniques in Structural Equation Modeling*. Londra: Lawrence Erbaum Associates Publishers, 2001.

Mayer, Richard E. "Thirty Years of Research on Online Learning." *Applied Cognitive Psychology* 33, no. 2 (August 2018): 152–59. https://doi.org/10.1002/acp.3482.

Mertens, Donna M. *Research and Evaluation in Education and Psychology: Integrating Diversity With Quantitative, Qualitative, and Mixed Methods*. California: Sage Publications, 2014.

Min, Qiusha, Zhifeng Wang, and Neng Liu. "Integrating a Cloud Learning Environment into English-Medium Instruction to Enhance Non-Native English-Speaking Students' Learning." *Innovations in Education and Teaching International* 56, no. 4 (2019): 493-504. doi:10.1080/14703297.2018.1483838

Money, William H., and Benjamin P. Dean. "Incorporating Student Population Differences for Effective Online Education: A Content-Based Review and

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Integrative Model." *Computers & Education* 138, (2019): 57–82. https://doi.org/10.1016/j.compedu.2019.03.013.

Mullen, Patrick R., Dodie Limberg, Victor Tuazon, and Shannon M. Romagnolo. "Emotional Intelligence and Leadership Attributes of School Counselor Trainees." *Counselor Education and Supervision* 58, no. 2 (2019): 112–26. https://doi.org/10.1002/ceas.12135.

Napiersky, Uwe, and Stephen A. Woods. "From the Workplace to the Classroom: Examining the Impact of Self-Leadership Learning Strategies on Higher Educational Attainment and Success." *Innovations in Education and Teaching International* 55, no. 4 (2018): 441–49. https://doi.org/10.1080/14703297.2016.1263232.

National Center for Education Statistics (NCES). "Fast Facts-Distance learning." Accessed October 20, 2020. https://nces.ed.gov/fastfacts/ display.asp?id=80

Neck, Christopher P., and Jeffery D. Houghton. "Two Decades of Self-Leadership Theory and Research." *Journal of Managerial Psychology* 21, no. 4 (2006): 270–95. https://doi.org/10.1108/02683940610663097.

Norton, Andrew, Ittima Cherastidtham and Will Mackey, *Mapping Australian higher education 2018*. Grattan Institute, 2018.

Okabayashi, Haruo, and E. Paul Torrance. "Role of Style of Learning and Thinking and Self Directed Learning Readiness in the Achievement of Gifted Students." *Journal of Learning Disabilities* 17, no. 2 (1984): 104–6. https://doi.org/10.1177/002221948401700210.

Online Learning and Distance Education Resources. "Canadian post-secondary enrolments: the role of online learning." Accessed October 25, 2020. https://www.tonybates.ca/2020/02/21/canadian-post-secondary-enrolments-the-role-of-online-learning/

Open Universities Australia. "Explore. Choose. Enrol." Accessed October 26, 2020 https://www.open.edu.au/

Pearson, Victoria, Kate Lister, Elaine Mcpherson, Anne-Marie Gallen, Gareth Davies, Chetz Colwell, Kate Bradshaw, Nicholas Braithwaite, and Trevor Collins. "Embedding and Sustaining Inclusive Practice to Support Disabled Students in Online and Blended Learning." *Journal of Interactive Media in Education* 2019, no. 1 (2019): 1-10. https://doi.org/10.5334/jime.500.

Prussia, Gregory E., Joe S. Anderson, and Charles C. Manz. "Self-Leadership and Performance Outcomes: the Mediating Influence of Self-Efficacy." *Journal of Organizational Behavior* 19, no. 5 (1998): 523–38.

Russo, Riccardo. *Statistics for the Behavioral Sciences: An Introduction*. Taylor & Francis e-Library, 2004.

Schunk, Dale H., and Barry J. Zimmerman, (eds.) *Self-Regulated Learning: From Teaching to Self-Reflective Practice*. New York: Guilford Press, 1998.

Seo, Kyung-Hwa. "The Effects of Self-Leadership on Career Decision-Making Self-Efficacy and Career Preparation Behavior - Focused on Culinary Major Students" *Culinary Science & Hospitality Research* 23, no. 2 (2017): 146–58. https://doi.org/10.20878/cshr.2017.23.2.015.

Singh, Kultar. *Quantitative Social Research Methods*. New Delhi: Sage Publications, 2007.

Stockdale, Susan L., and Ralph G. Brockett. "Development of the PRO-SDLS: A Measure of Self-Direction in Learning Based on the Personal Responsibility Orientation Model." *Adult Education Quarterly* 61, no. 2 (2011): 161–80. https://doi.org/10.1177/0741713610380447.

Suh, Han Na, Kenneth T. Wang, and Brooke J. Arterberry. "Development and Initial Validation of the Self-Directed Learning Inventory with Korean College Students." *Journal of Psychoeducational Assessment* 33, no. 7 (2015): 687–97. https://doi.org/10.1177/0734282914557728.

Tallent-Runnels, Mary K., Julie A. Thomas, William Y. Lan, and Sandi Cooper, Terence C. Ahern, Shana M. Shaw and Xiaoming Liu. "Teaching Courses Online: A Review of the Research," *Review of Educational Research* 76, no. 1 (Spring 2006): 93-135.

Techjury. "27 Astonishing E-learning Statistics for 2020." Accessed October 27, 2020. https://techjury.net/blog/elearning-statistics/#gref

Tekkol, İlkay Aşkin, and Melek Demirel. "An investigation of self-directed learning skills of undergraduate students." *Frontiers in Psychology* 9 (2018): 2324. doi: 10.3389/fpsyg.2018.02324

The Open University. "The world's leading distance-learning provider." Accessed October 25, 2020. http://www.openuniversity.edu/

The Turkish Council of Higher Education (CoHE). "Higher Education Knowledge Management System – Distance Education Statistics." Accessed October 20, 2020. https://istatistik.yok.gov.tr/

Tsai, Chia-Wen. "The Effect of Online Co-Regulated Learning in the Implementation of Team-Based Learning on Improving Students' Involvement." *Higher Education Research & Development* 34, no. 6 (2015): 1270–80. https://doi.org/10.1080/07294360.2015.1024631.

Usta, İlker, Ömer Uysal, & Muhammet Recep Okur. "Online learning attitude scale: Development, validity and reliability." *Journal of International Social Research 9, no*. 43, (2016):2215-22.

Was, Christopher A., R. Benjamin Hollis, and John Dunlosky. "Do Students Understand the Detrimental Effects of Mind Wandering during Online Learning?" *Computers & Education* 135, (2019): 113–22. https://doi.org/10.1016/j.compedu.2019.02.020.

Wilcox, Susan. "Fostering Self-Directed Learning in the University Setting." *Studies in Higher Education* 21, no. 2 (1996): 165–76. https://doi.org/10.1080/03075079612331381338.

Wong, Anne K. "Culture in Medical Education: Comparing a Thai and a Canadian Residency Programme." *Medical Education* 45, no. 12 (2011): 1209–19. https://doi.org/10.1111/j.1365-2923.2011.04059.x.

Xie, Kui, Lauren C. Hensley, Victor Law, and Zhiru Sun. "Self-Regulation as a Function of Perceived Leadership and Cohesion in Small Group Online Collaborative Learning." *British Journal of Educational Technology* 50, no. 1 (2019): 456–68. https://doi.org/10.1111/bjet.12594.

Tuning Journal for Higher Education
© University of Deusto. ISSN: 2340-8170 • ISSN-e: 2386-3137. Volume 8, Issue No. 1, November 2020, 129-165
doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165 • http://www.tuningjournal.org/

Zhao, Xinshu, John G. Lynch, and Qimei Chen. "Reconsidering Baron and Kenny: Myths and Truths about Mediation Analysis." *Journal of Consumer Research* 37, no. 2 (2010): 197–206. https://doi.org/10.1086/651257.

About the author

MEHMET DURNALI (durnali@beun.edu.tr) has been working in the state education sector since September 2004 taking different roles. Currently, Dr. Durnalı has been working for the Faculty of Education, Zonguldak Bülent Ecevit University (Zonguldak, Turkey) since October 2019 as Assistant Professor. He is a deputy principal of Zonguldak Bülent Ecevit University Educational Studies Research and Application Center as well. Before, having two years' experience in teaching as an ICT teacher, he was an assistant principal for two years. Then, he had worked for the central bodies of the Ministry of Turkish National Education as a project developer and executive officer between 2008 and 2019. He was a part-time lecturer for the Faculty of Education at Hacettepe University for a semester. Mainly, he has published several edited books, book chapters, articles and conference papers in the field of the faculty members' job satisfaction and perceptions of organizational politics, Turkey's higher education system and international students, university students' academic motivation, educational administration, organizational behaviours, technological leadership. Dr. Durnalı has a B.Sc. degree from faculty of education awarded by Boğaziçi University in 2004, an M.A. degree in 2015 and a Ph.D. degree in 2018 in educational administration awarded by Hacettepe University, Turkey.

The effect of Self-Directed Learning on the relationship between Self-Leadership and Online Learning among university students in Turkey

Mehmet Durnalı

doi: http://dx.doi.org/10.18543/tjhe-8(1)-2020pp129-165