Muslim Post-Graduate Students' Self-Leadership Skills and Productivity during Remote Teaching and Learning

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ARTICLE INFO	ABSTRACT
	The study aims to investigate the impact of self-leadership on Muslim postgraduate students' achievement or productivity during remote teaching and learning in Malaysian higher education institutions. The research instrument was a Likert questionnaire that measured the dimensions of self-leadership and productivity. The study employed principal component analysis (PCA) and path analysis using AMOS. The findings supported self-leadership as a multidimensional construct with five underlying dimensions comprising self-determined goals, self-reward, self-punishment, self–observation and self-cueing. Several latent variables further supported each dimension. In addition, the results showed that the dimensions of self-leadership and productivity are psychometrically sound regarding divergent and convergent validity. The average variance explained for each variable was ($>.05$), and the values for composite reliability of the constructs ranged from (.887 and .910). Furthermore, the study found that the dimensions of self-leadership, i.e. self-goal, self-reward, self-punishment, self–observation and self-cueing, positively predicted Muslim students' productivity during remote teaching and learning, with a p-value of less than 0.00. The study recommends promoting self-leadership strategies to enhance students' productivity and, in turn, their overall educational performance.

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INTRODUCTION

In academia, the COVID-19 pandemic forced those in leadership positions in Malaysian schools, colleges, universities, and the rest of the world to reduce interaction and curb infection by implementing mandatory remote teaching and learning ("RTL"). Despite this disruption caused by the closure of higher education institutions ("HEIs"), students could continue their studies due to some professors delivering their lectures online. Due to the earlier SARS crisis, professors familiar with online teaching could extend their online experience using cutting-edge educational technology, including learning management systems, interactive online resources, and online assessment tools. These tools and resources were already in abundance prior to the pandemic. Hence it became clear that adequate ICT skills, preparedness and a positive attitude towards RTL were key elements of online teaching and learning success. However, it also required students to be more independent learners who are self-directed and can engage in the Islamic concept of Muhasabah or reflection. Susanto's study highlighted that students with 21st-century character and skills would become individuals who can take opportunities and face global development challenges. The findings of this study describe that online learning is an excellent opportunity for teachers to instil technology-based character values.

Hodges et al. explain that independent learners are more likely to be well-organized and self-motivated at the tertiary level than their less independent peers. They also tend to have good time management skills, enabling them to personalize their learning and control what, when and how they learn it.[1] It relates to the Islamic concept of valuing time mentioned in Surah Ad-Dahr.

Leadership is essential for educators and students since seeking knowledge is considered a duty for every Muslim. Yet, leadership and teamwork cannot only be taught formally by telling students about their importance.[2] The theory is easily forgotten; discussing leadership will not make it part of student's personalities.[3] Transformational leadership holds that leadership should cause a change within individuals.[4] Hence, a deficiency in leadership skills could have one of two causes: a lack of mastery of the required competencies or a lack of focus on the necessary skills. Such gaps in students' leadership skills could have immediate and long-term effects on their learning outcomes and development.[5] More evidence of how important for teachers, whose role in guiding their students' success in learning is undeniably essential, to help make their students self-regulate their learning inside and outside the classroom by arousing their interest and

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[1] Charles Hodges et al., "The Difference Between Emergency Remote Teaching and Online Learning," Educause, 2020, 5, https://er.educause.edu/articles/2020/3/the-difference-between-emergency-remote-teaching-and-online-learning.

[2] Karen Seashore Louis et al., *Learning from Leadership Project: Investigating the Links to Improved Student Learning (Final Report of Research Findings)* (New York: Wallace Foundation, 2010), 5.

[3] James M. Kouzes and Barry Z. Posner, *The Truth about Leadership: The No-Fads, Heart-of-the-Matter Facts You Need to Know* (San Francisco: Jossey-Bass/John Wiley & Sons, Inc., 2010).

[4] Kenneth Leithwood and Karen Seashore-Louis, *Linking Leadership to Student Learning* (New York: John Wiley & Sons, 2011).

[5] Arnim Wiek, Lauren Withycombe, and Charles L. Redman, "Key Competencies in Sustainability: A Reference Framework for Academic Program Development," *Sustainability Science* 6 (2011): 203–218.

curiosity in the subject matter.[6]

Leadership is a common concept in management, but what is significant for Muslims is that leaders do not simply order others around but exemplify praiseworthy qualities demonstrated by the Prophet Muhammad. The researchers noted that few studies were conducted on SL (self-leadership) for university students. Cansoy et al. support this maintaining that there is a significant gap in the literature about leadership for university students.[7] It suggests that there is a need for fundamental empirical studies aimed at discovering the variables, characteristics, and models of SL for university students. Similarly, Foreman and Retallick highlight the need for studies exploring teachers' understanding and practices towards developing university students' SL skills.[8] Many studies conducted on leadership in educational settings focus either on the role of teachers or primary school principals as school administration leaders.[9] Very few studies, such as Kouzes and Posner, have looked at students as leaders of themselves in the classroom setting.[10]

Leadership experts, Neck, Manz, and Houghton[11] explain how individuals manage their behaviours by setting personal standards, evaluating their performance in terms of these standards, and self-administrate consequences based on self-evaluation. Rather than educational leaders exercising control over others, SL inspires Muslim students to exert influence over themselves. This kind of SL comprises three distinct categories of strategy: behaviour-focused strategies, natural reward strategies, and constructive thought strategies.[12] In other words, SL involves a variety of self-prescribed, behaviour-focused strategies that help students to improve their intrinsic motivation, constructive-thought techniques, positive self-talk and positive mental imagery.[13]

Empirical research across disciplines ranging from organizational management to sport psychology have provided consistent support for relationships between constructive thought strategies and enhanced individual performance. However, the research on students' productivity as determined by their self-leadership is anecdotal. Indeed, SL experts have advanced conceptual models exploring potential relationships between student SL and productivity. For example, Lovelace et al. advanced a model suggesting that

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[6] Ahmad Nadhif and Indah Rohmatika, "The Role of Self-Regulated Learning on Students' English Achievement," *Cendekia: Jurnal Kependidikan Dan Kemasyarakatan* 18, no. 2 (2020): 249–266.

[7] Ramazan Cansoy, Hanifi Parlar, and Mahmut Polatcan, "Collective Teacher Efficacy as a Mediator in the Relationship between Instructional Leadership and Teacher Commitment," *International Journal of Leadership in Education* 25, no. 6 (2020): 1–19.

[8] Elizabeth A. Foreman and Michael S. Retallick, "Undergraduate Involvement in Extracurricular Activities and Leadership Development in College of Agriculture and Life Sciences Students," *Journal of Agricultural Education* 53, no. 3 (2012): 111–23.

[9] Valentini Kalargyrou, Anthony T. Pescosolido, and Emmanuel A. Kalargiros, "Leadership Skills in Management Education," *Academy of Educational Leadership Journal* 16, no. 4 (2012): 39–65.

[10] James M. Kouzes and Barry Z. Posner, *The Student Leadership Challenge: Five Practices for Becoming an Exemplary Leader* (New Jersey: Jossey-Bass, 2018).

[11] Christopher P. Neck, Charles C. Manz, and Jeffery D. Houghton, *Self-Leadership: The Definitive Guide to Personal Excellence* (California: Sage Publication, 2016), 45. See also Christopher P. Neck and Jeffery D. Houghton, "Two Decades of Self-Leadership Theory and Research: Past Developments, Present Trends, and Future Possibilities," *Journal of Managerial Psychology* 21, no. 4 (2006): 270–295.

[12] Neck, Manz, and Houghton, *Self-Leadership: The Definitive Guide to Personal Excellence.*

[13] Andy Field, *Discovering Statistics Using IBM SPSS Statistics* (California: Sage Publication, 2013).

when people in high-stress work environments engage in SL practices, they experience higher engagement, leading to a greater sense of control over the task or situation.[14] Similarly, Houghton et al. present a model illustrating how "Effective emotional regulation and self-leadership, as mediated through positive affect and self-efficacy, have the potential to facilitate productivity among students."[15] Although not empirically testing their model, they gathered preliminary qualitative data in this area. They called for future researchers to explore the relationships between the constructs of their model.[16] The current study investigated the impact of SL on students' productivity during remote teaching and learning to answer the following research questions: 1) Do self-goal, self-reward, self-punishment, self–observation and self-cueing accurately define self-leadership in the context of Malaysian Higher Education institutions? 2) Are the dimensions of self-leadership and productivity psychometrically sound regarding divergent and convergent validity? 3) Do self-goal, self-reward, self-punishment, self–observation, and self-cueing positively predict students' productivity during remote teaching and learning?

RESEARCH METHOD

The current study employed advanced statistical analysis to study the phenomena of SL, P and RTL by collecting, analyzing, and interpreting quantitative data and using different statistical methods to achieve objective and generalizable results.
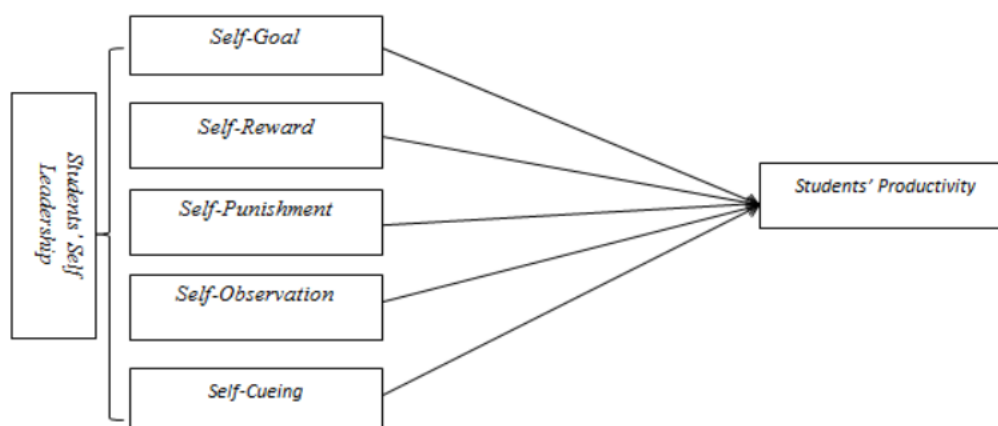

Figure 1. Conceptual Framework of the Research

The study population comprised 6473 Muslim postgraduate students studying at three Malaysian Universities: The International Islamic University Malaysia (IIUM), University Malaya (UM) and University Putra Malaysia (UPM). Given the formula below by

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[14] Sherri Lovelace and Sharon R. Stewart, "Increasing Print Awareness in Preschoolers with Language Impairment Using Non-Evocative Print Referencing," *Journal of Language, Speech, and Hearing Services in Schools (LSHSS)* 38, no. 1 (2007): 16–30.

[15] Jeffery D. Houghton et al., "Effective Stress Management: A Model of Emotional Intelligence, Self-Leadership, and Student Stress Coping," *Journal of Management Education* 36, no. 2 (2012): 220–38.

[16] Louis et al., *Learning from Leadership Project: Investigating the Links to Improved Student Learning (Final Report of Research Findings)*, 65–73.

Taherdoost and Hamed,[17] the study sample size is calculated to be 776 students. The stratified sampling procedure was used to select an adequate proportion of respondents in each university.

$$x = Z(^c/_{100})^2 r(100-r)$$

$$n = {}^{Nx}/_{((N-1)E^2 + x)}$$

$$E = \text{Sqrt}\left[{}^{(N-n)x}/_{n(N-1)}\right]$$

For stratification, the researcher categorised the population into sections or strata. The proportion ratio for each stratum is shown in the table below.

Total Population = 6473		
Sample Size = 776		
(UM)	(USIM)	IIUM
378	145	253
48.7%	18.7%	32.6%
Stratified Sample Size = 776		

A stratified sample was employed to ensure an even distribution of participants throughout the population's stratum, making the sample more representative. The sample comprised 378 students from the University Malaya, 145 from University Science Islam Malaysia (USIM) and 253 from the International Islamic University (IIUM), totalling 776 participants. Questionnaires were distributed to these 776 participants; however, only 615 questionnaires were deemed valid for data collection and analysis. The SL questionnaire consisted of 39 items adapted from the work of Houghton and Neck,[18] adapted and validated by Marques et al.[19] to measure self-leadership. A 5-point Likert scale was used to record individual responses 1 (Strongly Disagree), 2 (Disagree), 3 (Somewhat Agree), 4 (Agree), and 5 (Strongly Agree). The measurement consists of 39 items measuring the dimensions of students' SL and five items measuring the students' productivity. Productivity in the research refers to the learners' achievement in their academic field.

After testing the instrument's validity and reliability, the researcher administered a questionnaire of 44 items to the respondents. Before the data collection and analysis, the validity and reliability of the instrument were tested to ensure the usability of the instrument. The Cronbach alpha reliability test ranged from 0.76 to 0.92 for each

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[17] Hamed Taherdoost, "Determining Sample Size: How to Calculate Survey Sample Size," *International Journal of Economics and Management Systems* 2 (2017): 237–39.
[18] Jeffery D Houghton and Christopher P. Neck, "The Revised Self-Leadership Questionnaire: Testing a Hierarchical Factor Structure for Self-Leadership," *Journal of Managerial Psychology* 17, no. 7/8 (2022): 672–91.
[19] Nuno Ricardo Pombo Marques et al., "Implementation of Hazard Analysis Critical Control Points (HACCP) in a SME: Case Study of a Bakery," *Polish Journal of Food and Nutrition Sciences* 62, no. 4 (2012): :215-227.

dimension of SL and 0.85 for productivity. The study utilized SPSS version 25.0 and AMOS version 22 to analyze the data gathered from the participants' questionnaires. Three Multivariate Analysis tools were used, including Principal Component Analysis (PCA), Confirmatory Factor Analysis (CFA) and fully-fledged Structural Equation Modeling (SEM). PCA was used to understand the underlying structure of the constructs of SL and productivity during the RTL. Next, CFA was employed to validate the relationships between the observed and latent variables of SL and productivity in terms of composite reliability and convergent and discriminant validity. The internal consistency of the constructs was further established using Cronbach's alpha. Finally, fully-fledged SEM was used to assess the causal influence of SL on student productivity during remote teaching and learning.

RESULTS AND DISCUSSION
Behaviour Focused Strategies

According to Ashby[20], Wiener[21], and Powers[22], the main objective of 'behaviour-focused' strategies is to help learners behave in more productive ways by eliminating destructive habits, for example, procrastination. SL strategies operate within the larger theoretical framework of self-regulation. Neck and Manz clarify that students need to learn to use SL strategies to complete unpleasant activities, thereby making them more enjoyable, i.e. reframing their mindset to concentrate on long-term goals rather than short-term gratification. Building positive attitudes and effective habits is the key to success, in line with the Sunnah of Rasulullah, i.e. eliminating bad habits and replacing them with constructive ones. It is a preliminary step towards seeking knowledge. Such 'Behavior-focused' strategies include self-observation, self-goal setting, self-reward, self-punishment, and self-cueing.

Components of Students' Self-Leadership
1. Self-observation

Åhman et al. maintain that self-knowledge is related to self-esteem. Suppose Muslim students are to exercise control over themselves. In that case, they need high self-confidence and self-awareness, i.e. knowledge about themselves, their strengths and weaknesses. Put another way, according to Neck and Manz, self-leadership involves students being aware of the triggers for their desirable and undesirable behaviours to manage themselves.[23] Through increased self-observation and self-awareness, Mahasabha students develop the discipline to catch themselves from negative study habits.

In contrast, many of our daily activities become automatic or unconscious. We

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[20] G. E. Ashby, "Oxyluminescence from Polypropylene," *Journal of Polymer Science* 50, no. 153 (1961): 99–106.

[21] Norbert Wiener, *Cybernetics; or Control and Communication in the Animal and the Machine* (Unitated State of America: American Psychological Association, 1948).

[22] William T. Powers, *Behavior: The Control of Perception* (Unitated State of America: American Psychological Association, 1973).

[23] Christopher P. Neck and Charles C. Manz, *Mastering Self-Leadership: Empowering Yourself for Personal Excellence* (New Jersey: Person Prentice-Hall, 2007).

often perform our daily tasks effortlessly while concentrating on other things. In the context of higher education, Muslim students need to practice effective study strategies and behaviours to the level of 'unconscious competence. Self-observation involves raising students' awareness of why and when to engage in good behaviours. For example, self-awareness helps students to eliminate unproductive habits. With this awareness of their bad habits and performance levels, students can set more challenging goals, significantly increasing their productivity or ijtihad.

2. Self-goal setting

Studying rigorously without clear goals is likely fruitless; hence, effective SL entails students knowing what they want and how to achieve it.[24] It means setting specific goals with clear timelines that guide Muslim students' decision-making on daily activities. Moreover, setting clear goals increases students' feelings of accomplishment, reducing stress and anxiety.[25] Neck and Houghton[26] maintain that setting specific and challenging goals significantly increases students' performance levels as they acquire a goal-oriented mindset, making decision-making easier. Academic goal setting is a fundamental part of self-regulated learning. Barry Zimmerman supports this by explaining that self-regulated learning begins with a goal-planning phase.

3. Self-rewarding

Self-rewarding is a powerful self-management strategy that helps Muslim students' achievement. By rewarding themselves for good behaviour, students positively influence their actions. Externally administered rewards only motivate students extrinsically, for example, prizes, praise and awards. However, self-administered rewards operate on intrinsic motivation, like seeking Allah's pleasure which is more effective and longer lasting than extrinsic motivation.[27] In short, a 'self-reward system' where students give themselves small privileges for achieving small tasks and more enormous privileges for completing more significant tasks helps them to organise their lives and studies more effectively.[28]

Self-reward strategies can be as simple as Muslim students mentally praising Allah and themselves for achieving significant accomplishments or taking a vacation to complete a difficult task or project. Self-correction and self-punishment, on the other hand, consist of Muslim students performing introspection about undesirable behaviours, leading to a change in that behaviour.

4. Self-punishment

Another attribute of SL is 'self-punishing'. Self-punishment is contingent upon failing to complete an activity or meet an assignment deadline. The result is that students deny themselves an enjoyable activity, such as not going out to see a movie

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[24] Neck and Manz.

[25] Sonja Kivinen et al., "Effects of Modern Forest Management on Winter Grazing Resources for Reindeer in Sweden," *AMBIO* 39 (2010): 269–278.

[26] Neck and Houghton, "Two Decades of Self-Leadership Theory and Research: Past Developments, Present Trends, and Future Possibilities."

[27] Neck and Manz, *Mastering Self-Leadership: Empowering Yourself for Personal Excellence.*

[28] Jessica L. Tracy and Richard W. Robins, "Putting the Self into Self-Conscious Emotions: A Theoretical Model," *Psychological Inquiry* 15, no. 2 (2004): 103–125.

they have waited to see because they did not submit a report on time.[29] Such self-applied consequences aim to decrease undesirable behaviours.[30] Self-punishment can also be applied mentally as harmful internal speech. However, Neck and Houghton advise against too much self-punishment or self-criticism, as it can have a negative effect on performance.[31] As believers, Muslims are essentially optimistic. Thus, too much negative thought about past failures is un-Islamic because it could stop students from moving forward. Maintaining a balance between self-punishment and self-reward is crucial for successful SL.

5. **Constructive thought pattern strategy**

Constructive thought pattern strategy represents a systematic effort to alter Muslim students' thinking towards Islamic ends. Constructive thought pattern strategy is a characteristic of SL that involves rephrasing negative thoughts into positive ones. This self-regulation reduces negative emotions students experience when meeting challenging situations.[32] In time, students can learn to control their negative feelings and attitudes, avoiding adverse outcomes that hinder them from Islamic behaviour and productivity.

6. **Self-talk**

Self-talk refers to Muslim students talking to themselves about past, present and future events, either positively or negatively. Self-talk helps students form more apparent beliefs about themselves. For example, students may focus on something bad they did, making them feel guilty, or on something good they achieved, building them up.[33] However, too much negative self-talk reduces self-confidence. It prevents students from feeling good about themselves, which can become a 'self-fulfilling prophecy.'[34] Therefore, Muslim students must be aware of their self-talk and strive to reduce negative self-talk and increase positive self-talk. The Prophet Muhammad was very positive and seldom grumbled or complained about things. Muslim students should strive to emulate this characteristic.

SL Impact Student Productivity at Malaysian HEI's

A central aim of the research was to examine the extent to which high levels of SL impact student productivity at Malaysian HEIs, where collaboration, innovation and risk-taking are highly valued. Figure 1. shows the dimensions of SL as the independent variable, while student productivity is the dependent variable. The study's theoretical framework outlines the supporting theories underlying it, explaining their relevance to the research problem. Conversely, the conceptual framework describes how the phenomena extend existing knowledge and assumptions about the variables.

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[29] R. Edward Freeman, "The Stakeholder Approach Revisited," *Zeitschrift Für Wirtschafts- Und Unternehmensethik* 5, no. 3 (2004): 228–41.

[30] Neck and Manz, *Mastering Self-Leadership: Empowering Yourself for Personal Excellence.*

[31] Neck and Houghton, "Two Decades of Self-Leadership Theory and Research: Past Developments, Present Trends, and Future Possibilities."

[32] Neck and Manz, *Mastering Self-Leadership: Empowering Yourself for Personal Excellence.*

[33] Neck and Manz.

[34] Neck and Manz.

The conceptual framework comprises exogenous and endogenous variables, which, in the case of this study, are the dimensions of SL and productivity. The study's results present the causal relationships between the variables studied, namely, the influence of SL on P during RTL. Table 1 below details the indicators, factor loadings, composite reliabilities and average variance extracted ("AVE").

A preliminary check for inter-correlation between the measurement items (shown in Table 1) confirms the suitability of PCA for predicting the underlying factors of SL and P. Table 1 shows a Kaiser-Meyer-Olkin Measure of sampling adequacy index of .911 and a Barlett's Test of Sphericity of χ^2 840 =17814.8, p= .000. A Promax Rotation conducted on the 39 items, extracted five dimensions for SL and five items P with a TVE of 68%. The correlation of observed variables was sound with item loadings at >0.5. The extraction of constructs showed SL as a multidimensional construct comprising self-goal, self-reward, self-punishment, self-observation and self-cueing.

The Dimensionality of SL and P Constructs

The study established the dimensionality of SL and P during the RTL period for Malaysian HEIs. Table 1 presents the descriptive analysis of the observed variables of SL and P. The total mean for each sub-construct ranged from 3.91 to 4.01, implying that most respondents agreed with the relationship between the observed variables of SL and P. According to Pallant[35] and Rossi Ferrario et al., Cronbach's alpha values portrayed good internal consistency for the constructs and items .882 to .912, the threshold being 0.7.[36] The validity of all dimensions of SL and P was supported with a total variance explained ("TVE") of 40%, as recommended by Rossi Ferrario et al. the TVE for each construct was 68.5% and 62.3% for SL and P, respectively.[37]

Table 1. Dimensions and Total Variance of Students' Self-Leadership and Productivity

Dimensions			Factor Loading
Self-Goal	Self_GoalQ1	I establish specific goals for my performance	.765
	Self_GoalQ2	I have daily goal setting	.774
	Self_GoalQ3	I work toward specific goals I have set for myself	.801
	Self_GoalQ4	I create a deadline for my daily target	.721
	Self_GoalQ5	I set a goal that fulfils my achievement	.665
	Self_GoalQ6	I consciously have goals in mind for my work efforts	.556
	Self_Goal.Q7	I think about the goals that I intend to achieve in the future	.711

[35] Julie F. Pallant et al., "Psychometric Evaluation and Refinement of the Prenatal Attachment Inventory," *Journal of Reproductive and Infant Psychology* 32, no. 2 (2014): 112–25.

[36] Silvia Rossi Ferrario et al., "Development and Psychometric Properties of a Short Form of the Illness Denial Questionnaire," *Psychology Research and Behavior Management* 12 (2019): 727—739.

[37] Ferrario et al.

Dimensions			Factor Loading
	Self_GoalQ8	My goal-setting strategies need to improve	.663
	Self_GoalQ9	I feel bad if my goal is not achieved	.652
Self-Reward	Self_RewardQ1	When I finished my assignment, I rewarded myself	.661
	Self_RewardQ2	When I do something well, I reward myself with a special event such as a good dinner, movie, shopping trip, etc.	.681
	Self_RewardQ3	When I have successfully completed a task, I often reward myself with something I like	.815
	Self_RewardQ4	I appreciate myself after I accomplish each task	.736
	Self_RewardQ5	I join other leisure activities when my task is completely done	.859
	Self_RewardQ6	I reward myself with a game after my task is accomplished	.806
Self-Punishment	Self_PunishQ1	I tend to blame myself in my mind when I have performed poorly	.774
	Self_PunishQ2	I challenge myself if my goal is not accomplished	.777
	Self_PunishQ3	I tend to be tough on myself in my thinking when I have not done well on my assignment	.680
	Self_PunishQ4	I cannot sleep without completing my task	.661
	Self_PunishQ5	I feel guilty when I perform and task poorly	.681
	Self_PunishQ6	I stress myself to accomplish my daily goal	.815
	Self_PunishQ7	I sometimes openly express displeasure with myself when I have not done well	.736
Self-Observation	Self_ObservQ1	I make a point to keep track of how well I'm doing at university	.859
	Self_ObservQ2	I observe my daily performance regularly	.661
	Self_ObservQ3	I keep data on my assignment as a reference for myself.	.730
	Self_ObservQ4	I am usually aware of how well I'm doing as I perform an activity	.696
	Self_ObservQ5	I check my activities daily for	.697

Dimensions			Factor Loading
		improvement	
	Self_ObservQ6	I pay attention to how well I am doing in my study	.809
	Self_ObservQ7	I focus on daily goals to see them accomplished	.822
	Self_ObservQ8	I keep track of my progress on projects I'm working o	.834
	Self_ObservQ9	I checked my level of achievement at the end of the task	.736
	Self_ObservQ10	I am aware of my daily activities	.826
Self-Cueing	Self_CueingQ1	I set a reminder for every task	.831
	Self_CueingQ2	I have my daily activities written	.736
	Self_CueingQ3	I use written notes to remind myself of what I need to accomplish	.826
	Self_CueingQ4	I marked my notes after accomplishing a task	.831
	Self_CueingQ5	I use concrete reminders to help me focus on the things I need to accomplish	.729
	Self_CueingQ6	I complete tasks one after the other	.725
	Self_CueingQ7	I organize my task for easy accomplishment	.567
P	PQ1	I picture myself performing well on important tasks	.851
	PQ2	I found myself being productive when I submit my assignment	.740
	PQ3	I completed my most hated assignment before all the others when I set a goal.	.797
	PQ4	I visualize myself successfully performing a task before I do it pro	.774
	PQ5	I enjoy constant learning and improvement	.806

*** Note: Extraction Method: Principal Component Analysis; Rotation Method: Promax with Kaiser Normalization*

Psychometric Properties of SL

The study explored the psychometric properties of the multidimensional constructs of SL and P. The findings establish the convergent and discriminant validity of SL and P (See Table 2). The statistics along the diagonal portray the AVE explained by the constructs through their indicators, representing convergent validity. The AVE values are

more significant than the threshold value of 0.5, indicating evidence of convergence is valid. In addition, the P construct satisfies discriminant validity properties with a larger AVE than the values of shared variance (values more significant than the diagonal in Table 2 below). Finally, the findings portray the composite reliability of the constructs showing fair values, ranging from .887 and .910.

Table 2. Inter-factor correlation, Average variance extracted (AVE) and Composite Reliability (CR) for all Constructs

Variables	1	2	3	4	5	6
Self- Goal	0.855					
Self-Reward	0.553	0.991				
Self-Punishment	0.772	0.882	0.885			
Self – Observation	0.881	0.442	0.443	0.778		
Self-Cueing	0.842	0.551	0.771	0.664	0.812	
P	0.663	0.662	0.557	0.564	0.551	0.778
Composite Reliability	0.889	0.880	0.774	0.765	0.775	0.910

Note. Indicated along the diagonals, is each sub-construct's average variance extracted (AVE). Below the diagonal is the correlation matrix, and above the diagonal is the shared variance matrix.

The study sought to investigate whether the dimensions of SL (self-goal, self-reward, self-punishment, self–observation and self-cueing) impacted Malaysian HEI Muslim students' productivity. In other words, would students' ability to self-observe, self-goal set, self-reward, self-punish and self-cue lead to more successful study behaviour? Overall, the results show SL as a psychometrically sound measure facilitating Muslim students' productivity and academic achievement.[38]

In sum, the study's findings indicate a significant relationship between the dimensions of the SL of Malaysian HEI Muslim students and their productivity, with significant p-values and t-statistics. It supports the hypothesis that the SL dimensions of self-observation, self-goal setting, self-rewarding, self-punishing and self-cueing predict Malaysian HEI Muslim students' productivity during RTL. Moreover, the findings yielded the following path relationships between the variables SL and P, where β = .000 for all variables and CR > 1.96.

Table 3. Path-Analysis Coefficients of SL and P

Structure Path		Unstandardized Estimates	Standardized Estimates	CR		P-Value	Decision-based on the test of significance	Practical importance based on the
Exog.	Endo.			(>.19	t-statisti	(<0.0	e	

[38] Charles C. Manz, "Self-Leading Work Teams: Moving Beyond Self-Management Myths," *Journal of Tropical Futures* 45, no. 11 (1992).

	(>.2) β	(>.2) β	6)	cs	0)	(>.196)	effect size (>.2)
Self-goal ↔ P	.711	.789	9.452	3.443	***	Supported	Sig.
Self-reward ↔ P	.672	.792	9.051	3.442	***	Supported	Sig.
Self-punishmen t ↔ P	.730	.880	10.07 2	2.884	***	Supported	Sig.
self − observation ↔ P	.781	.749	8.530	3.113	***	Supported	Sig.
self-cueing ↔ P	.721	.771	10.17 9	3.772	***	Supported	Sig.

*Note: *** p-value less than 0.00*

Table 3. shows a significant impact of the SL dimensions of self-observation, self-goal setting, self-rewarding, self-punishing and self-cueing on Muslim students' productivity during RTL. As we have seen, SL strategies imply responsibility and independence on the part of students, which in turn, positively affects their performance and outcomes.[39] In other words, a p-value of less than 0.00 indicates a significant impact of SL on P. It is in line with the views of Jooste and Frantz,[40] who explain that SL in higher education requires learners to move from extrinsic change factors to intrinsic ones for learning to improve. It means to actualize P in an academic setting. Students must control themselves and their learning habits, i.e. to have confidence and conscience to reward and punish themselves for their behaviour and misconduct. Hence, to understand SL in the context of higher education, Muslim students need to know their role, formally and informally, intentionally and unintentionally, concerning the acquisition of knowledge.

SL engenders a sense of ownership, resulting in a higher commitment to study goals and work processes than students with low SL skills. Grint[41] asserts that effective self-leaders must learn to lead themselves before attempting to lead others. Put another way, being a good leader of oneself means being a better leader of others,[42] particularly in an RTL setting where students require a strong sense of their own identity and self-worth.

In light of this, a study by Strivens and Ward identified a positive link between SL and student learning who find ways to incorporate self-reflection into their learning strategies, enhancing their self-efficacy.[43] Similarly, Sitzmann and Johnson found that helping students to plan their development was only effective when accompanied by

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[39] Manz.

[40] Karien Jooste and Jose Frantz, "Self-Leadership Traits of Academics to Conform to a Changing Higher Education Environment," *African Journal of Health Professions Education* 9, no. 4 (2017): 199–202.

[41] Keith Grint, Owain Smolovic Jones, and Clare Holt, "What Is Leadership: Person, Result, Position or Process, or All or None of These?," in *The Routledge Companion to Leadership* (New York: Routledge, 2016), 3–20.

[42] Jooste and Frantz, "Self-Leadership Traits of Academics to Conform to a Changing Higher Education Environment."

[43] Janet Strivens and Rob Ward, *Reflection as a Strategy to Enhance Students' Engagement in Their Learning* (The Student Engagement Handbook: Practice in Higher Education), 2013.

interventions that promoted self-regulation, self-motivation, self-goal setting and self-evaluation.[44]

It is worth noting that the Malaysian National Education Philosophy ("NEP") seeks to develop leaders who can collaborate, innovate and lead themselves and others. This study provides valuable insights into how Muslim postgraduate students practised SL during the challenging times of the pandemic and the resultant RTL, a phenomenon hitherto unknown. Thus, the findings show that SL requires learners to be self-motivated and apply SL skills of self-goal setting, self-rewarding, self-punishment, self–observation and self-cueing to achieve optimum productivity during RTL.

CONCLUSION

The study shows how SL improved Malaysian HEI Muslim students' productivity during remote teaching and learning through statistical analyses, including principal component analysis and path analysis using AMOS. It established that SL is a multidimensional construct comprising five sub-constructs: self-goal setting, self-reward, self-punishment, self–observation and self-cueing. In addition, each dimension was measured through latent variables, and SL and P dimensions were psychometrically sound in terms of divergent and convergent validity. Lastly, the dimensions of SL (self-goal setting, self-reward, self-punishment, self-observation and self-cueing) positively predicted Muslim students' productivity during RTL.

These findings are consistent with the theories of self-directed learning and self-goal setting, where students create goals for themselves due to intrinsic motivation. Indeed, a self-goal setting is a requisite part of student learning, which is contingent upon the choices, direction and effort put in by students to their learning. Based on the results of the study, it can be concluded that SL has the potential to enhance Muslim students' performance and achievement, not only in education but in the workplace as well as in the Muslim Community as a whole. The results provide new research areas for HEIs concerning productivity and employability. SL is a transferable skill that can help Muslim students prepare for a world where educational technology, remote teaching, learning, and knowledge or information are increasing exponentially.

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