

Measuring the Academic Self-Efficacy of Undergraduates: The Role of Gender and Academic Year Experience

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Abstract—Self-efficacy beliefs provide the foundation for human motivation, well-being, and personal accomplishment. This study measured the levels of academic self-efficacy of undergraduates and also examined whether there any differences in academic self-efficacy with respect to gender and academic year. A structured questionnaire was employed to collect data from undergraduates who enrolled the Bachelor of Commerce degree programme at the University of Sri Jayewardenepura. The outcome of the study revealed that undergraduates lacked the confidence to ask and answer questions, seek help from lecturers, have a study plan and engage in academic discussion and note-taking. However, the findings also demonstrated that undergraduates were not hesitant about seeking help from friends, had confidence on meeting the deadlines and completing the degree within four years. Interestingly, females displayed higher academic self-efficacy than males. Specifically, the data were supported to conclude that there were significant differences in academic self-efficacy with respect to academic years.

Keywords—Academic year, bachelor of commerce undergraduates, gender, self-efficacy.

I. INTRODUCTION

THE higher education has encountered more varied students who are away from parental control and less monitoring [1]. As Brinkworth [2], Hussey [3] and Wingate [4] mentioned, students who engage in higher education cope with a learning environment that demands higher levels of autonomy, initiative, and self-regulation. This pattern of learning environment, unfortunately, converts higher education to a stressful and emotional experience to undergraduates [5], [6]. Since gaining a better insight into the students' feeling about academic life, the current study is concerned with the undergraduates of Bachelor of Commerce (B.Com) degree program, Department of Commerce, University of Sri Jayewardenepura (USJP). The study conducted a preliminary informal survey on 50 undergraduates (including three academic years) and asked them to express their true feelings about their academic life. Unfortunately, 45 students indicated that their academic life is a stressful, unsatisfied, tired and emotional experience. This finding was completely consistent with the opinions of Christie [5] and Gibney [6]. The consequence becomes more severe, where

students are unable to cope with this transition, leading to poor academic performance and high drop-out rates [7], [8]. Hence, it is vital to gain a better insight into attributes of students who persevere in their studies.

Social cognitive theory emphasised that self-efficacy is a key variable associated with both academic adjustment and achievement [9]-[11]. The construct of self-efficacy [12] best explain academic self-confidence in students [13]. Academic self-confidence has its theoretical foundations in Bandura's work of self-efficacy. Self-efficacy beliefs provide the foundation for human motivation, well-being, personal accomplishment and self-regulation [13]. It is interesting to note that Bandura [14] used the terms confidence and self-efficacy interchangeably, while Sander [15] opined that the two concepts are distinct but related. Sanders [15] believed that academic behavioural confidence applies to how students cope with the demands of the course as a whole, rather than to individual module specific issues where self-efficacy measures would be more appropriate [16]. Hence, the present study sought to answer the questions of (1) what is the level of academic self-efficacy of B.Com undergraduates? (2) Is there a significant difference in academic self-efficacy between male and female undergraduates? And (3), is there a significant difference in the academic self-efficacy of the undergraduates within three academic years?

The rest of this paper is organized as follows. The next section outlines the theoretical view of the academic self-efficacy, followed by hypotheses to be tested. The research design in terms of the methodological approach used is elaborated next. The results and discussion are then presented, before the paper is concluded with future research directions.

II. THEORETICAL REVIEW AND HYPOTHESES

A. Self-Efficacy

Social cognitive theory perceives individuals as proactive social agents, who adapt actively rather than simply undergo experiences through environmental stressors acting on their personal vulnerabilities [17], [7]. As such, self-efficacy beliefs are a core mechanism for producing motivation to exercise control over events that affects one's life [18]. Self-efficacy refers to one's faith in one's abilities to arrange and perform actions that are needed to achieve desirable outcomes [19]. Self-efficacy beliefs are a source of motivation which will refrain from taking action and from realising one's abilities [18], [20]. Hence, self-efficacy beliefs are strongly associated

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with an individual's levels of accomplishment and should be particularly relevant in enhancing internal, cognitive problem-solving strategies and in reducing withdrawal strategies [21]. Efficacy domains traditionally relate to the academic, social and emotional arenas [17].

B. Academic Self-Efficacy

Academic self-efficacy refers to a student's confidence in his/her abilities to successfully perform academic activities at a desired level [22]. Self-efficacy is situationally specific; beliefs in one domain may or may not affect beliefs in others [19]. In that way, the concurrent reduction in academic self-efficacy can influence social and emotional self-efficacy beliefs [23], [24]. Increase in academic self-efficacy may act as a resilience factor to lessening symptoms of depression [17]. As Bandura [23] stated, academic self-efficacy is easier to obtain. Thus, it may be useful as an intervention to increase flexibility for at-risk populations [19] like undergraduates.

Prior studies have shown that academic self-efficacy positively associated with academic achievement [7], [9], [25], [11]. The students with a strong belief of academic self-efficacy generate a greater interest in academic activities through establishing demanding goals and act towards to achieving them [9]. As such, academic self-efficacy affects performance by influencing effort, persistence and perseverance [26]. In addition, Chemers [27] indicated that highly efficacious students experienced less stress, resulting in less health problems and a better adjustment to the higher education environment. Hence, the present study intends to identify the level of academic self-efficacy of B.Com. Undergraduates of USJP in Sri Lanka.

Furthermore, prior studies have shown that female students have a lower level of self-efficacy than males in several subject areas [28]. However, Huang [29] concluded that females displayed higher self-efficacy than males. In contrast, Choi [30] reported no gender differences in academic self-efficacy of undergraduates. Since there is no consistency in the gender difference findings, the present study aims to examine whether there are gender differences in the level of academic self-efficacy of male and female B.Com. Undergraduates of USJP in Sri Lanka. Hence, the following hypothesis is proposed:

H1. There are significant differences in the levels of academic self-efficacy of male and female B.Com. Undergraduates.

Bandura [18] indicated that self-efficacy is affected by four sources: mastery experience, vicarious experience, verbal persuasions, and psychological and affective states. Among these sources, mastery experiences are the most influential source. The mastery experience refers as the impact of previous success in approaching similar tasks [7]. In order to identify the effect of mastery experience of the academic period, the study intends to examine the differences in the level of academic self-efficacy of three academic years' undergraduates. Hence, the study measures academic self-efficacy of B.Com. Undergraduates in degree parts II, III and IV. (Degree part I students were not included since they have not have enough opportunity to experience the academic

environment). Based on these arguments, the following hypothesis is proposed:

H2. There are significant differences in the levels of academic self-efficacy of B.Com. Undergraduates in degree parts II, III and IV

III. METHODOLOGY

The scope of the study includes undergraduates enrolled on the B.Com. (Special) degree programme at the University of Sri Jayewardenepura. Three degree parts undergraduates were selected as the sample of the study. There was a potential population of 347 undergraduates (110, 118 and 119 from degree parts II, III and IV, respectively) and completed questionnaires were received from 297 (100, 96 and 101 from degree parts II, III and IV, respectively), resulting in an 85.6% response rate. The sample included 45 males and 55 female undergraduates from degree part II, 43 males and 53 female from degree part III and 47 males and 54 female from degree part IV.

A self-administrated, structured questionnaire was developed to collect data from the undergraduates. In assessing academic self-efficacy, the study adapted the instrument developed by Byrne [7] and Matoti [13]. A total of 20 items were featured in the survey questionnaire using a five-point Likert scale ranging from strongly disagree to strongly agree. The questions of each of the constructs were reviewed by a set of academics in order to ensure comprehensiveness and clarity. The questionnaire was then initiated to pilot test by 30 undergraduates to ensure further clarity.

This study follows two data analysis procedures: (1) The assessment of adequacy of the measurement items; and (2) the assessment of the hypotheses constructed. In order to assess the adequacy of the measurement items, inter-item correlation, number of factor extracted, reliability analysis and data normal distribution were tested. On the second procedure, independent sample t-test and one-way ANOVA test were employed to test the hypotheses constructed. The Statistical Package for Social Science (SPSS) version 21 was utilized.

IV. RESULTS AND DISCUSSION

A. Assessment of Adequacy of Measurement

There were 20 items to measure the level of academic self-efficacy. For adequate construct validity, the highest correlation value for the selected element with corresponding rows and columns should be from 0.30 to 0.90 [31]. The inter-item correlation result revealed that the highest correlation for each item with at least one other item in the academic self-efficacy construct was between 0.3 and 0.9. A single factor was extracted that explained 69.8% of the total variation in the 20 items. The Cronbach's alpha value was 0.791 (>0.7), indicating the appropriateness of items measured. The normality of the variables was evaluated using Kolmogorov-Smirnow test (since sample size is more than 50). The p-value of the test was more than 0.05, the data can be assumed to be distributed normal. This permits the further analysis to be

conducted.

B. Level of Academic Self-Efficacy

The mean academic self-efficacy scores together with the standard deviation for the 20 items are presented in Table I.

The Table I also categorized the undergraduates' responses into two categories: not confident (score of 1-3 on items) and confident (score of 4-5).

TABLE I
LEVEL OF ACADEMIC SELF-EFFICACY

Statement	Mean	SD	Not Confident %	Confident %
1. I ask questions in lectures	2.91	1.070	71.0	29.0
2. I respond to questions asked in lectures	3.34	.927	52.7	47.3
3. I draw up a study plan	3.24	.937	62.4	37.6
4. I ask for help from my lecturers	3.03	1.005	64.5	35.5
5. I write up additional notes	3.01	1.081	61.3	38.7
6. I plan my time for examinations	3.74	.936	34.8	65.2
7. I ask for help from my friends when I have issues in subjects matters	4.39	.708	10.8	89.2
8. I produce my best work in examinations	3.62	.871	35.5	64.5
9. I engage in academic discussions with my friends	2.72	.741	75.3	24.7
10. I make sense of feedback on my assignments	3.62	.894	41.1	58.9
11. I explain subject matters to my friends	4.08	.783	18.3	81.7
12. I make a good attempt to answer questions in advance	3.05	.834	51.6	48.4
13. I meet the deadlines for my assignments	3.48	.978	47.8	52.2
14. I make an attempt to meet the deadline for group assignments	3.59	1.071	35.9	64.1
15. I pay attention during every lecture	3.53	1.006	46.2	53.8
16. I express my opinion when I do not understand the lectures	2.87	.991	79.1	20.9
17. I feel nervous when I am doing presentations (R)	3.10	1.133	62.4	37.6
18. I come forward to do presentations in group assignments	3.11	.978	52.4	47.6
19. I feel confident that I can complete the degree within 4 years	4.49	.855	11.8	88.2
20. I make sense of feedback on my examinations	3.54	.999	48.9	51.1

The results in Table I show that over 50% of the respondents were not confident about asking questions and responding to questions in lectures, drawing up a study plan, asking for help from lecturers, writing additional notes, engaging in academic discussion with friends, expressing an opinion and speaking in front of their peers. It is important to note that the lectures in the B.Com. degree programme were delivered in large lecture rooms which have a seating capacity of 130. Prior studies [7], [32], [33] indicated that interaction between the students and their lecturers is not possible in a large lecture room. As reasons, they highlighted that students believed that lecturers of large classes did not have the time to talk to individual students and lecturers did not know students individually. As such, B.Com. undergraduates in this study lacked the confidence to ask questions and respond to questions in lectures and ask for help from lecturers. Further, the findings indicated that many of the undergraduates were not confident in their ability to draw a study plan and to engage in additional note-taking. In line with that, the undergraduates were not comfortable to speak out in front of their peers. These results emphasise that many of the undergraduates doubted their capability of managing time, preparation and communication skills.

Fortunately, 88% believed that they will be able to complete the degree within four years. Further, more than 50% of respondents reported that they were able to meet the deadlines of their assignments and were able to make an attempt to meet the deadline for group assignments. In addition, just over 50% of respondents were confident that they can judge the standard

required to get good marks in assignments and examinations. The vast majority of the respondents are confident to ask help from friends (89.2%) and to explain subject matters to friends (81.7%). Table I also shows that an average of 64% of the respondents were confident that they were able to plan their time for examinations and produce their best work in examinations. Additionally, over half of the respondents were confident that they can pay attention during the lectures.

C. Assessment of the Hypotheses

In the case of H1, t-test was performed to examine whether there were any gender differences in the undergraduates' level of academic self-efficacy. First, the study tested the overall self-efficacy scores differences with gender. Table II shows the result of independent sample t-test.

Overall, the result in Table II reveal that there were significant differences in the levels of academic self-efficacy between male and female undergraduates ($p < 0.05$). Hence, the data were supported to accept H1. Second, the study tested significant differences in the levels academic self-efficacy on the basis of gender (Table III).

Based on Table III, there were six significant differences in the levels of academic self-efficacy on the basis of gender ($p < 0.05$). Female undergraduates were significantly more confident in their ability to write up additional notes, plan time for examinations, ask help from friends, engage in academic discussions with friends, make sense of feedback on assignments and pay attention during lectures. Literature on self-efficacy has reported different results on level self-

efficacy on the basis of gender. According to them, some studies revealed that females are less confident than males [28], and in contrast, males are less confident than females [29]. In terms of gender differences result found in this study, it might be that female undergraduates' academic self-efficacy are raised by their sense of belonging to the formal learning

environment, commitment and study habits.

In order to test H2, one-way ANOVA test was performed. Similar to gender analysis, the study tested the overall self-efficacy scores differences with academic years first. The result of the test is presented in Tables IV and V.

TABLE II
OVERALL ACADEMIC SELF-EFFICACY WITH GENDER

		Levene's Test for Equality of Variances		t-test for Equality of Means						
		F	Sig.	t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval	
								Lower		Upper
SE*	Equal variances assumed	0.637	0.427	-2.46	297	0.016	-0.23159	0.09406	-0.41842	-0.04475
	Equal variances not assumed			-2.51	50.806	0.015	-0.23159	0.09198	-0.41627	-0.04690

* Self-efficacy

TABLE III
LEVELS OF ACADEMIC SELF-EFFICACY ANALYSED BY GENDER

Statement		Male		Female		Sig.
		Mean	SD	Mean	SD	
1.	I ask questions in lectures	3.19	1.039	2.80	1.070	0.118
2.	I respond to questions asked in lectures	3.26	0.859	3.38	0.957	0.575
3.	I draw up a study plan	3.41	0.797	3.17	0.986	0.263
4.	I ask for help from my lecturers	2.78	1.013	3.14	0.991	0.119
5.	<i>I write up additional notes</i>	2.70	1.031	3.58	0.850	0.000
6.	<i>I plan my time for examinations</i>	3.44	0.934	3.86	0.916	0.041
7.	<i>I ask for help from my friends when I have issues in subjects matters</i>	4.15	0.818	4.48	0.638	0.037
8.	I produce my best work in examinations	3.37	0.884	3.73	0.851	0.073
9.	<i>I engage in academic discussions with my friends</i>	2.63	0.688	2.97	0.744	0.044
10.	<i>I make sense of feedback on my assignments</i>	3.20	0.913	3.78	0.838	0.005
11.	I explain subject matters to my friends	3.96	0.808	4.12	0.775	0.380
12.	I make a good attempt to answer questions in advance	3.04	1.003	3.05	0.768	0.941
13.	I meet the deadlines for my assignments	3.52	0.802	3.46	1.047	0.801
14.	I make an attempt to meet the deadline for group assignments	3.50	0.949	3.62	1.120	0.628
15.	<i>I pay attention during every lecture</i>	3.22	1.013	3.65	0.984	0.032
16.	I express my opinion when I do not understand the lectures	2.74	0.859	2.92	1.044	0.429
17.	I feel nervous when I am doing presentations	2.81	1.039	3.21	1.157	0.125
18.	I come forward to do presentations in group assignments	3.56	0.892	3.77	1.012	0.343
19.	I feel confident that I can complete the degree within 4 years	4.48	0.753	4.50	0.899	0.925
20.	I make sense of feedback on my examinations	3.56	1.050	3.54	0.985	0.941

TABLE IV
DESCRIPTIVE RESULT

	N	Mean	Std. Deviation	Std. Error	95% Confidence Interval for Mean		Minimum	Maximum
					Lower Bound	Upper Bound		
Year II	100	3.1539	0.51910	0.06034	3.0337	3.2742	2.17	4.41
Year III	96	3.4676	0.48826	0.05601	3.3560	3.5792	2.17	4.50
Year IV	101	3.5626	0.42290	0.04385	3.4755	3.6497	2.35	4.50
Total	297	3.4084	0.50319	0.03228	3.3449	3.4720	2.17	4.50

TABLE V
ANOVA RESULT

	Sum of Squares	df	Mean Square	F	Sig.
Between Groups	7.271	2	3.635	16.156	0.000
Within Groups	54.005	295	0.225		
Total	61.275	297			

The results in Table IV revealed that there were differences

in the mean levels of academic self-efficacy among undergraduates in parts II, III and IV. The mean value of degree part IV was greater than the other two degree parts. The p-value in Table V ($p < 0.001$) indicated that the mean value differences were statistically significant. Hence, the data were supported to accept H2. Further, the study tested significant differences in the levels academic self-efficacy on the basis of academic years (Table VI).

TABLE VI
LEVELS OF ACADEMIC SELF-EFFICACY ANALYSED BY ACADEMIC YEARS

Statement	Degree Part II	Degree Part III	Degree Part IV	Sig.
	Mean	Mean	Mean	
1. I ask questions in lectures	2.63	2.97	3.41	0.018
2. I respond to questions asked in lectures	2.51	2.84	3.31	0.015
3. I draw up a study plan	2.17	3.04	3.23	0.013
4. I ask for help from my lecturers	2.54	2.84	3.08	0.019
5. I write up additional notes	2.58	3.18	3.40	0.000
6. I plan my time for examinations	3.53	3.66	3.74	0.803
7. I ask for help from my friends when I have issues in subjects matters	3.72	4.18	4.43	0.024
8. I produce my best work in examinations	3.43	3.53	3.57	0.073
9. I engage in academic discussions with my friends	2.68	2.96	3.04	0.041
10. I make sense of feedback on my assignments	3.08	3.24	3.37	0.076
11. I explain subject matters to my friends	3.71	3.84	3.91	0.361
12. I make a good attempt to answer questions in advance	3.01	3.03	3.06	0.956
13. I meet the deadlines for my assignments	3.22	3.36	3.41	0.705
14. I make an attempt to meet the deadline for group assignments	3.16	3.28	3.37	0.422
15. I pay attention during every lecture	3.09	3.28	3.64	0.027
16. I express my opinion when I do not understand the lectures	2.61	2.77	2.93	0.438
17. I feel nervous when I am doing presentations	3.47	3.14	2.75	0.025
18. I come forward to do presentations in group assignments	3.38	3.54	3.61	0.327
19. I feel confident that I can complete the degree within 4 years	4.41	4.43	4.49	0.912
20. I make sense of feedback on my examinations	3.11	3.23	3.30	0.847

Based on Table VI, there were nine significant differences in the levels of academic self-efficacy on the basis of academic years ($p < 0.05$). The undergraduates in degree part IV were significantly more confident in their ability to ask questions and respond to questions in lectures, draw up a study plan, ask for help from lecturers, write up notes, ask for help from friends, engage in academic discussions with friends, pay attention during lectures and speaking in front of their peers. The undergraduates enrolled in degree part II record the lowest level of academic self-efficacy. This result provided an evidence to verify the opinion of Bandura [18]; stated that mastery experience is the most influential source of academic self-efficacy. Since there is not enough evidence available to support Bandura's opinion, the result of this study fetches important practical implications to support Bandura's opinion. Accordingly, this research has extended the understanding of the importance of mastery experience gathered from academic environment on undergraduates' academic self-efficacy.

V. CONCLUSION AND IMPLICATIONS

The study intends to measure the levels of academic self-efficacy of B.Com. undergraduate students. The analysis revealed that many of the undergraduates suffered from low levels of academic self-efficacy with respect to a range of academic activities such as asking questions and responding to questions in lectures, drawing up a study plan, asking for help from lecturers, writing additional notes, engaging in academic discussion with friends, expressing an opinion and speaking in front of their peers. As prior studies recorded, students with high self-efficacy are associated with higher levels of academic performance and experienced less stress, less health problems and a better adjustment to the higher education environment. Hence, it requires creating a supportive

educational environment which provides undergraduates with the opportunity to enhance their academic self-efficacy.

It is worthwhile to note that lecturers in the three academic years continuously encouraged undergraduates to approach them if they needed assistance. However, the undergraduates in this study were willing to ask for help from their friends rather than approach their lecturers. It might be that there is a lack of a trust-based relationship between lecturers and undergraduates. It seems that undergraduates with low efficacy feel that if they ask for help they will be perceived as lacking in ability [7]. In order to overcome such attitudes, lecturers need to emphasise the benefits that undergraduates could gain from academic engagements and provide a positive experience when undergraduates do seek help. Additionally, gender differences in the level of academic self-efficacy were evident in this study. Even though gender differences were observed for six academic activities, lecturers must be concerned with the gender-specific aspect when developing confident building strategies.

In examining the academic year differences in the level of academic self-efficacy, the study revealed that there were significant differences in the level of academic self-efficacy of undergraduates enrolled in degree parts II, III and IV. The result indicated that undergraduates in degree part IV show the highest level of academic self-efficacy relative to the other degree parts. The analysis clearly demonstrated that gaining experience in an academic environment leads to enhancement of the academic self-efficacy undergraduates. Supported by a large sample size with the goodness of measures established, this study has made another important contribution by addressing the significant lack of published research regarding the impact of mastery experience on academic self-efficacy.

However, the study focused on undergraduates from one

degree programme at one university. Hence, the ability to generalise the reported results to other types of degree programmes remains restricted. Further research is needed to test the established measurement items on other degree programmes as well as other universities. This study measured the academic self-efficacy with respect of a whole degree programme. It is hoped that further study needs to investigate the academic self-efficacy within core subject areas, as it offers the potential to better understand undergraduates learning issues and academic performance in the different course modules. Since prior studies revealed a positive association between academic self-efficacy and academic performance, the causality interaction can also be investigated in future study.

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