



## TEST COMPLETION TIME, SUBJECT SCORES AND ACADEMIC SELF-EFFICACY. HOW DO THEY RELATE?

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### **Abstract:**

Educators always endeavor to unravel the myriad of unexplained variables in learning environments. Examination taking is one such variable. Given the importance attached to examination results, educators seek answers as to why some students have shorter completion time than others and whether they end up scoring better than those who finish later. Is this phenomenon related to their levels of academic self-efficacy? This study set out to investigate the relationship between academic behavior confidence, test scores and test completion time. It was grounded on the self-efficacy theory by Albert Bandura. In an exam-taking situation, twenty-five early finishers and twenty-five late finishers were identified in a common unit examination in a public university in Kenya. They later filled out the Academic Behavior Confidence scale developed by Sander & Sanders (2019). The relationships between the completion time, the test scores on the common unit and their Academic Behavior Confidence scores were investigated using non-parametric approaches, specifically the Spearman's rho and Mann-Whitney U test. Results show a significant difference between completion time and test scores. Paradoxically, there is no significant difference between completion time and ABC scores. However, there is a positive relationship between test scores and Academic Behavior Confidence scores. It is recommended that educators should use mastery experiences, verbal persuasion and vicarious experiences to enhance Academic Self-efficacy, which may, in turn, improve test scores.

**Keywords:** self-efficacy, academic self-efficacy, academic behavior confidence, examinations, test completion time, test scores, early finishers, late finishers

### **1. Introduction**

Educators are tasked with the holistic development of the learner. They are also involved in the totality of curriculum development, setting objectives, selecting content, selecting methodologies for delivery, selecting learning resources and designing

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strategies for student assessment. Further, they are expected to advise students on all curriculum areas, including test-taking behavior (McDannel & Pepper, 2013).

Examinations have been a major characteristic of educational systems the world over since time immemorial (Chinyani et al., 2013). They are used by society to measure educational achievement. Parents judge their children by performance in these exams while potential employers use the results for recruitment. Given the importance attached to examinations, educators have to concern themselves with factors which are manifest during examination taking. One of these factors is exam completion time, which this article seeks to address. A casual observation in any examination hall shows different completion times for different candidates. Should students be advised to finish as early as possible, or continue writing their examinations until the last minute? Is completion time related to the test scores? Is completion time related in any way to the Academic Self-Efficacy (ASE) of the learner? And do test scores relate to ASE?

## 2. Research objectives

This study set out to:

- 1) Determine the association between exam completion time and test scores.
- 2) Find out the relationship between exam completion time and academic self-efficacy.
- 3) Establish the relationship between academic self-efficacy and test scores.

### 2.1 Hypotheses

The study sought to test the following hypotheses:

**H<sub>01</sub>:** There is no statistically significant difference between examination subject scores for early and late finishers.

**H<sub>02</sub>:** There is no statistically significant difference between Academic Behavior Confidence scores for early and late finishers

**H<sub>03</sub>:** There is no statistically significant relationship between Academic Behavior Confidence and examination subject scores for the combined groups

### 2.2 Rationale

There is a paucity of research literature on exam completion time, test scores and ASE, especially in Kenya and more studies are needed in this area. Whether test scores are related to completion time, and to ASE is still a matter of conjecture. Furthermore, gaining new perspectives on student behavior during exams may promote an understanding of the phenomenon, providing the teacher with an additional stock of knowledge for instruction and guidance to students during pedagogical interactions.

### 2.3 Theoretical underpinning

The study is based on the self-efficacy component of Bandura's (1977; 1997) social-cognitive theory, believed by many scholars to be a critically important theoretical contribution to the study of academic achievement, motivation, and learning (Pajares,

1996). Bandura's theory elucidates the development of attitudes from a social learning framework in which behavior is theorized to depend on one's sense of self-efficacy. ASE involves self-regulated learning and helps a student use their own resources to plan, control and analyze the execution of tasks, activities and the preparation of learning products (Schunk, 1985). Further, scholars have speculated that ASE may play a greater role in student achievement than actual ability.

### 3. Literature review

Educators are aware that students do not finish examinations at the same time. There are those who finish quite early, and there are those you have to tell to stop writing at the expiry of the time set for that exam. The amount of time students spend on an exam is of particular interest and knowledge concerning this may influence how students are advised on time management during examination-taking (McDannel & Peffer, 2013). The relationship between test completion time and test performance/scores has previously been explored in the research literature, and the outcomes are both mixed and complicated (Landrum et al., 2009). For example, Burack (1967) failed to find any relationship at all; Michael and Michael (1969) found that students finishing in the middle obtained the highest scores, but they were later unable to replicate this finding; Terranova (1972) found higher scores for those finishing in the middle; Johnson (1977) found very high and very low scores occurred for those finishing first or last, while average scores occurred for those finishing in the middle; Herman, (1977) found these variables relatively unrelated; Paul & Rosenkoetter (1980) found the highest scores for those finishing first; Bridges (1985) failed to find any relationship at all; Foos (1989) concluded that one cannot successfully predict students' test scores by knowing the order of completion or the time taken to complete the exam while Persky & Mierzwa (2018) established that the time to complete the examination was significantly negatively correlated with examination score. It has even been hypothesized that there could be three possible relationships between completion time and test performance: a linear relationship where fast finishers score better; a curvilinear relationship where students who have middle-of-the-road completion times score better; and a relationship where middle-of-the-road completers exhibit less test score variability as compared to fast and slow completers (Wierzbicki, 1994). Are these observations in any way related to Academic Self-Efficacy (ASE)? Could ASE be the mediating variable? With these mixed findings, teachers and academic advisors are at a loss as far as student advice is concerned. Furthermore, these studies do not address the underlying reasons for the observed behavior, and thus the necessity for this study.

Bandura (1994) noted that people's behavior could often be better predicted by the beliefs they hold about their own capabilities than by what they were really capable of accomplishing. In 1995, he stressed that beliefs determine how people feel, think, motivate themselves and behave. He explained the role of beliefs in what he calls self-efficacy, defined as "*beliefs in one's capabilities to organize and execute the courses of action required to produce given attainments*". One category of these beliefs is Academic Self-

Efficacy (ASE) which involves self-regulated learning and helps a student use their own resources to plan, control and analyze the execution of tasks, activities and the preparation of learning products (Schunk & Zimmerman, 1995). Interestingly, having high SE can lead to stronger performance which is independent of actual ability. Students with high ASE tend to get better grades and show greater persistence when compared to students with lesser. Moreover, students with high SE use more cognitive strategies that are useful when it comes to learning, organizing their time and regulating their own efforts. Additionally, they usually target high scores, have a greater curiosity to learn, actively ask questions in class, love to read and review literature, are not easily discouraged, and consider failure to be a positive motivation (Shikalepoh, 2016).

In most cases, students with high SE tend to outperform predicted expectations, while those with low SE often do not attain their true potential (Klassen & Lynch, 2007). In a study done in Lima, Peru there was a positive and significant relationship between ASE and academic performance in first-year university students in the city of Lima (Alegre, 2014). In an analogous study, ASE was found to be directly correlated to academic performance (Basith, Syahputra & Ichwanto, 2020). In contrast, some studies have revealed no significant relationship between ASE and academic performance (Cho & Shen, 2013; Gębka, 2014). Operationalization of ASE, the timing of measurement, and cultural differences have been proposed as reasons (Honicke & Broadbent, 2016). Currently, it has been assumed that ASE is one of the most important factors or predictors for learners to achieve learning success. This may mean that if a student's ASE is enhanced, the student may be able to achieve higher academic results. Indeed, Basith et al. (2020) posit that any improvement in academic self-efficacy will be accompanied by an improvement in academic achievement. Kemp (2011) posits that when a student who experiences failure in the classroom is given positive feedback by the teacher, the self-efficacy of the student might gain strength, and this could help the student to turn his failure into a success in the future. Thus, Teachers need to be careful with their type of behaviour and their feedback against their students for the sake of academic self-efficacy of their students. This study set out to find out whether this construct was related to examination completion time.

Several tools have been developed to measure ASE. The author selected the Academic Behaviour Confidence (ABC) scale, introduced and located in the psychological literature of self-efficacy by Sander & Sanders (2003, 2004, 2006, 2019). Academic behavioral confidence contains students' self-evaluations about whether they have the ability to fulfill the responsibilities the university education requires from them or not. The construct validity of the ABC shows the items are valid (Ifdil, Bariyyah, Dewi & Rangka, 2019), and for this reason, data were collected using the ABC scale as originally published (Appendix 1)

#### 4. Methodology and Participants

Data for this study was collected from Third Year students in the Bachelor of Education course at South Eastern Kenya University (SEKU), which is a public university in Kenya. The samples used in this study were collected in one unit, TAP302, which is a common unit for both Bachelor of Education (Science) and Bachelor of Education (Arts). At SEKU, all the students for a common unit are taught together and sit for exams as one group but in different rooms. The participants in this study were from a group of students taking the examination from one lecture hall which accommodates approximately two hundred students. Without any prior information to the students, the researcher, who was the facilitator for the unit and also an invigilator in the examinations organized the scripts in order of completion and numbered them accordingly. The first and the last twenty-five scripts (fast finishers and slow finishers) were selected for this study, making a total of fifty participants.

Using the EMIS, the researcher identified the first twenty-five and the last twenty-five students in order of completion. Once the students were identified, the researcher emailed a request letter for the specific students to participate in the study, assuring them of total confidentiality. Two fast finishers and three late finishers failed to respond and were therefore replaced. The researcher then administered and scored the Academic Behavior Confidence scale developed by Sander & Sanders (2003; 2006) which the students filled out online. The students' scripts were then marked and moderated. Scores in the common unit for the sampled students were extracted from the EMIS and used for analysis.

#### 5. Results and Discussions

##### 5.1 Results

The findings were as shown in Table 1.

**Table 1:** Order of completion, exam scores and ABC scores

Early Finishers				Late Finishers			
Student	Order of completion	Score	ABC score	Student	Order of completion	Score	ABC score
A1	1	62	99	A2	176	52	111
B1	2	64	112	B2	177	56	111
C1	3	53	108	C2	178	55	109
D1	4	57	105	D2	179	50	93
E1	5	56	112	E2	180	53	100
F1	6	67	114	F2	181	64	114
G1	7	64	100	G2	182	50	109
H1	8	70	116	H2	183	62	114
I1	9	63	99	I2	184	50	112
J1	10	62	112	J2	185	63	112
K1	11	56	109	K2	186	52	94
L1	12	60	114	L2	187	64	105
M1	13	64	112	M2	188	60	116

N1	14	62	114	N2	189	60	116
O1	15	64	115	O2	190	56	115
P1	16	53	112	P2	191	55	101
Q1	17	57	109	Q2	192	50	99
R1	18	56	112	R2	193	53	99
S1	19	67	114	S2	194	64	112
T1	20	64	101	T2	195	50	112
U1	21	70	112	U2	196	62	116
V1	22	63	111	V2	197	50	114
W1	23	62	94	W2	198	63	114
X1	24	56	101	X2	199	52	105
Y1	25	60	116	Y2	200	64	93

## 4.2 Discussions

Because of the small sample utilized for this study, the researcher could not assume normal distribution and hence used non-parametric tests for analysis. The early finishers had an average subject score of 61.28 and an SD of 4.69, while the late finishers had an average subject score of 56.4 and an SD of 5.43. On the ABC scores, the early finishers had an average of 108.92 and an SD of 6.17, while the late finishers had an average of 107.84 and an SD of 7.50. The correlation between the order of finishing within the group and the subject scores for the early finishers was 0.0077 ( $p=0.97$ ) and the one for ABC score was 0.099 ( $p=0.637$ ). The correlation between the order of finishing within the group and the subject scores for the late finishers was 0.14 ( $p=0.503$ ) and the one for ABC score was 0.101 ( $p=0.629$ ). This is summarized in Table 2.

**Table 2:** Summary descriptions for Early and Late finishers

	Early finishers		Late finishers	
	Subject score	ABC score	Subject score	ABC score
<b>Mean</b>	61.28	108.92	56.4	107.84
<b>sd</b>	4.69	6.17	5.43	7.50
<b>rho</b>	0.0077	0.099	0.14	0.101
<b>P value</b>	$p$ (2-tailed) = 0.97	$p$ (2-tailed) = 0.637	$p$ (2-tailed) = 0.503	$p$ (2-tailed) = 0.629

The researcher then investigated the other hypothesis for the study using the Mann-Whitney U test.

**H<sub>01</sub>:** There is no statistically significant difference between examination scores for early and late finishers.

The result of the Mann-Whitney U test is summarized in Table 3.

**Table 3:** Mann-Whitney U test Result Details, subject scores, early versus late finishers

Score (Early Finishers)	Score (Late Finishers)	Score (Early Finishers) vs Score (Late Finishers)
Sum of ranks: 790	Sum of ranks: 485	Sum of ranks: 1275
Mean of ranks: 31.6	Mean of ranks: 19.4	Mean of ranks: 25.5
Expected sum of ranks: 637.5	Expected sum of ranks: 637.5	Standard Deviation: 51.5388
Expected mean of ranks: 25.5	Expected mean of ranks: 25.5	
<i>U</i> -value: 160	<i>U</i> -value: 465	
Expected <i>U</i> -value: 312.5	Expected <i>U</i> -value: 312.5	

The *U*-value is 160. The *Z*-Score is 2.94923. The *p*-value is .00318. The result is significant at  $p < .05$ .

The null hypothesis was therefore rejected. There was a statistically significant difference between the subject scores for the early and late finishers. This finding concurs with Paul & Rosenkoetter (1980) who found the highest scores for those finishing first and contradicts the findings by Foos (1989) who concluded that one cannot successfully predict students' test scores by knowing the order of completion or the time taken to complete the exam.

**H<sub>02</sub>:** There is no statistically significant difference between Academic Behavior Confidence scores for early and late finishers.

**Table 4:** Mann-Whitney U Test Result details, ABC data, early versus late finishers

ABC Scores (Early Finishers)	ABC Scores (Late Finishers)	ABC Scores (Early Finishers) vs ABC Scores (Late Finishers)
Sum of ranks: 652.5	Sum of ranks: 622.5	Sum of ranks: 1275
Mean of ranks: 26.1	Mean of ranks: 24.9	Mean of ranks: 25.5
Expected sum of ranks: 637.5	Expected sum of ranks: 637.5	Standard Deviation: 51.5388
Expected mean of ranks: 25.5	Expected mean of ranks: 25.5	
<i>U</i> -value: 297.5	<i>U</i> -value: 327.5	
Expected <i>U</i> -value: 312.5	Expected <i>U</i> -value: 312.5	

The *U*-value is 297.5. The *z*-score is 0.28134. The *p*-value is .77948. The result is *not* significant at  $p < .05$ .

The null hypothesis was therefore accepted. There was no statistically significant difference between the ABC scores for the early and late finishers. This can be interpreted to mean that ASE scores cannot predict examination completion time.

**H<sub>03</sub>:** There is no statistically significant relationship between Academic Behavior Confidence and subject scores for the combined groups.

The researcher could not assume normal distribution and therefore used Spearman's rho to calculate the direction and strength of correlation. This yielded rho=0.28935, and a *p*-value (2-tailed) of 0.04154 which was significant at  $\alpha=0.05$ . The null

hypothesis was therefore rejected. This finding concurs with Alegre, 2014 and Basith, Syahputra & Ichwanto (2020).

## 6. Conclusion and Recommendations

The conclusions to be made from this study may not be generalized to the population due to the small sample size. However, it can be inferred that the order of finishing/completion has some significance as far as subject scores are concerned. Those who complete the examinations early tend to score slightly higher than those who finish later. Academic Self Efficacy is important and educators should endeavor to develop it using vicarious experiences, verbal persuasion and mastery experiences in the hope of raising academic performance.

### Conflict of Interest Statement

The author declares no conflicts of interest.

### About the Author

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## Appendix 1

### Academic behavioural confidence

How confident are you that you will be able to?

1. Study effectively on your own in independent/private study
2. Produce your best work under examination conditions
3. Respond to questions asked by a lecturer in front of a full lecture theatre
4. Manage your workload to meet coursework deadlines
5. Give a presentation to a small group of fellow students
6. Attend most taught sessions.
7. Attain good grades in your work.
8. Engage in profitable academic debate with your peers
9. Ask lecturers questions about the material they are teaching, in a one-to-one setting
10. Ask lecturers questions about the material they are teaching, during a lecture
11. Understand the material outlined and discussed with you by lecturers
12. Follow the themes and debates in lectures.
13. Prepare thoroughly for tutorials.
14. Read the recommended background material.
15. Produce coursework at the required standard.
16. Write in an appropriate academic style.
17. Ask for help if you don't understand.
18. Be on time for lectures.
19. Make the most of the opportunity of studying for a degree at university
20. Pass assessments at the first attempt.
22. Remain adequately motivated throughout.
23. Produce your best work in coursework assignments.
24. Attend tutorials.

Each was scored on a 5-point differential scale

- Not at all confident ...1...2...3...4...5...Very confident

(Sander & Sanders, 2003, 2006a)

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