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ABSTRACT

In this project, 276 students at a private university in Nigeria completed a survey concerned with their personal attributes and study dispositions. First class (summa cum laude) students were compared with third class (less successful) students. Differences were not found in their goal setting habits, and declaration of healthiness. The third class students indicated higher levels of participation in sporting activities. The first class students reported higher levels of spirituality and Bible reading. When asked about their use of basic study skills, the two groups reported fairly similar levels, but then they diverged strongly on deeper learning approaches, with the first class students reporting higher levels of deep study strategies.

Keywords: Nigeria, Higher education, Student success, Learning attributes, Study skills

INTRODUCTION

In this project we set out to investigate attributes that might be associated with successful student outcomes at a Nigerian university. This constitutes one part of an action research endeavor to assist faculty staff in identifying ways to assist student adapt to university studies (Oluwatayo *et al.*, 2016; Odukoya *et al.*, 2017; Uba *et al.*, 2017). In particular, we sought to establish if, on a self-report basis, more successful students, known as summa cum laude, could be distinguished from students who, although successful in terms of overall studies, nevertheless are not achieving at a high level, once we define achievement in terms of grades. The cumulative grade point average (CGPA) was able to define these two groups from university records, to enable such contrasts to proceed.

The present project concerns data gathered through an online questionnaire. It was possible to match students' grades to information they provided about their study experiences. Toward this goal, we created a self-report instrument, the Covenant Learning Attributes Scale (CLAS). This tool was designed to tap selected aspects of the student experience in the effort to identify attributes specifically associated with high level achievement, as defined by summa cum laude status.

Student attributes that may undermine university achievement. Faculty at this university had expressed concerns about factors that might be working against high achievement. The context was that of a Christian-based university, but nevertheless, concern had been expressed that an excessive focus upon spirituality may not be conducive with academic goals such as intensive study and higher grade point averages. Hence, one of our primary goals was to investigate what our highest achieving students would state about their disposition and habits in connection with this issue. Another issue defined by staff concerns

was participation in sports activities. It was generally believed that our top students were less likely to engage in university sports activities.

Whilst our initial expectation was that any factors that take a student away from his or her studies may have detrimental effects, it should be noted that the research literature into extracurricular activities often has noted positive relationships between such activities and achievement at the primary school and adolescent levels (Eccles, Barber, Stone & Hunt, 2003; Silliker & Quick, 1997). The situation at the college and university level is largely unknown. However, Jayanthi *et al.* (2014) did report that students who claimed to engage in extracurricular activities did have slightly higher GPAs at a Singaporean tertiary college. We can note that it is unclear just what the term 'extracurricular' actually means. In the Jayanthi *et al.* study, students were asked to tick a box if they engaged in any such activity. In our present study we asked students to report separately on two such activities (a) religious, and (b) sports.

Factors that may facilitate university achievement. Our secondary goal was to investigate what our students would tell us about their strategies for studying. Whilst planning this project, faculty staff meetings were held by way of consultation. It became apparent that faculty were concerned about how their students actually study. Many staff admitted to giving advice freely and repeatedly on such matters. According to staff, students are routinely advised as to the value of regular patterns, study goals, attending classes, and note taking. Such advice was seen as consistent with the pastoral care aspects of university life. Assuming such staff reports are valid, then graduating students are likely to have received a high level of encouragement and advice about how to study effectively.

Would it be possible to relate what students say about their study patterns and goals to their graduation level CGPA? In particular, we speculated that students may not always

accept advice from Faculty, or may otherwise develop their own methods of effective study.

In developing the CLAS instrument, we generated items to target student goal setting tendencies as well as their study strategies.

An interesting distinction has emerged from the research literature into natural human learning strategies (Hattie, Biggs & Purdie, 1996; Hattie & Donoghue, 2016). There exists considerable evidence for a key distinction between surface and deep learning. Deep learning is described in terms of high level functioning, finding and using associations, in being able to apply general principles, and describe meaningful relationships and patterns across different contexts. Deep learning permits thoughtfulness and problem solving.

On the other hand, surface learning is a term used to describe basic acquisition and the successful learning of important information, but without the apparent ability to generalise the learning across situations. Thus, over time and structured practice opportunities, learning processes can shift from surface to deep as an important index of complexity in mental development. It is crucial to appreciate how surface learning provides a secure base allowing deep learning to proceed. Without the foundation of prior knowledge being in place, students cannot shift their thinking into deeper levels. By its nature, human learning is highly cumulative in that shifts take place from knowledge to application, from simple to complex, and from surface to deep.

The surface versus deep distinction, as emerging from learning theory research, provided a model for item generation when planning the present project. We speculated that faculty were adept in suggesting study strategies that represent basic study methods, i.e., successful surface learning. However, we felt that faculty are less likely to be able to encourage study strategies that may be associated with deeper learning outcomes. Instead, the ability to employ such strategies could be a characteristic dependent upon students' self-

initiated learning. This theorising, that students' strategies may relate either to faculty advice or to self-initiated leaning, was used to generate two types of items, which we labelled (a) basic study skills strategies, and (b) deep study skills strategies.

The present study. A further goal underpinning the present project was to investigate if the basic versus deep distinction could apply meaningfully to how students of different achievement levels report upon their study success. It was anticipated that, summa cum laude students, when contrasted with third class students, would display lower levels of spirituality, and sports participation. But it was anticipated that the summa cum laude group would indicate higher levels of goal setting since goal setting is often noted as characteristic of high achieving students (Morisano, Hirsh, Peterson, Pihl, & Shore, 2010; Zimmerman, Bandura, & Martinez-Pons, 1992). Finally, we generally predicted that summa cum laude students would report employing higher levels of study skills, but most especially when their study activities appear to align more closely with deep study strategies.

Method

Participants

The participants were students enrolled at a private Nigerian university, where the normal medium of instruction was English language. Data were collected on basis of an online questionnaire, dispatched via the university server, and accessed on the Moodle learning platform. One thousand and seven (1007) students responded. However, completed protocols were available for 276 students on the basis of (a) their full participation which involved disclosing the student matriculation number per ID, and (b) identification as either a summa cum laude student or a third class student. Summa cum laude students are defined within this institution as those with cumulative grade point averages above 4.5 out of 5. Third

class students have CGPA levels between 1.5 and 2.4. Second class students were not sampled in the present dataset.

Overall, 218 (72 male) students were identified as summa cum laude (SCL), and 58 (41 male) students as third class. Although relatively more females participated than males, gender differences in questionnaire responses were relatively slight and this factor will not be reported upon further.

Questionnaire

The Covenant Learning Attributes Scale (CLAS) was developed for this project. It consisted of 30 items, although 4 items served as fillers. Each item consisted of a self-referent statement and a response opportunity using a 4-point intensity scale incrementing from “*never*” (1) to “*always*” (4).

Single items were used to tap four specific attributes: self-discipline, sleep, sports participation, and money. These items, respectively, were (a) *I apply self-discipline*, (b) *I sleep for about 7 hours daily*, and (c) *I engage in sporting activities/exercises*, and (d) *I have enough money*.

The CLAS was used to articulate four constructs: spirituality, goal setting, basic study skills, and deep study skills. Spirituality was indexed through three items: (a) *I pray for about an hour daily* (b) *I read at least one chapter of the Bible daily*, and (c) *I actively participate in spiritual activities*. The three items correlated meaningfully. An internal reliability Alpha coefficient of 0.73 was obtained with all three items contributing.

Goal setting was indexed through 4 items: (a) *I use a daily to-do list*, (b) *I have written weekly goals*, (c) *I have written life goals*, and (d) *I work on my written goals*. It was found that all items correlated strongly, with all four items contributing with an internal reliability Alpha of 0.8.

Basic study was indexed through 7 items, with all contributing strongly to the resultant scale, which had an internal reliability Alpha of 0.67. Deep study was indexed through 8 items with all items contributing, and an internal reliability Alpha of 0.76.

TABLE ONE ABOUT HERE

As noted earlier in Introduction, the distinction between basic and deep skills in personal studying hinged upon context. This classification was agreed upon through consensus within the research team. It was found that the two scales, basic study and deep study skills, correlated at 0.64, $p < .01$. Whilst this correlation indicates considerable variance overlap between these two indices, it can be noted that respective means differed significantly, when averaged across items. Statements reflecting basic strategies were endorsed at a higher level than statements reflecting deep study strategies. This aspect is discussed further within Results.

Results

Initial inspections indicated no serious departures from normal distributional criteria on any item or construct aggregate. All construct scores were reduced to the 4-point metric through averaging principles. It was found that the third class students indicated a higher level of participation within sporting activities, relative to the summa cum laude (SCL) students. However, the two groups did not diverge on the two statements 'I am healthy' and 'I get about 7 hours sleep at night'. Means are shown in Table 2.

TABLE TWO ABOUT HERE

Goal setting. The two groups did not diverge on their declared levels of goal setting. We conducted item analyses as follow-up to the construct scores analysis, and found that the two groups did not diverge significantly on any of the 4 items tapping goal setting dispositions.

Spirituality. Means testing on the three items tapping spirituality indicated higher levels of this trait amongst the SCL students. In general, scores on these items were not high, and this was most apparent on one item ‘*I pray for about an hour a day*’ which elicited a response of ‘*always*’ from only 7% of the sample, with 22% reporting ‘*never*’. However, when we then asked how many students indicated ‘*always*’ on *any* of the 3 items, collectively, it was found that 79 of 218 (36%) of SCL students did so, compared to only 10 of 58 (17%) of the third class students, a significant effect per frequency analysis, $X^2(1) = 7.6, p < .01$.

Study skills. Although means inspections suggested that two target groups appeared to diverge on level of basic study strategies, this effect did not achieve significance, $F(1,274) = 2.73, p = .13$. It was apparent that, in conjunction with basic strategies, the apparent divergence was largely attributable to the item ‘*I attend all lectures*’. As shown within Table 1, 73% of SCL students said ‘*always*’ to this specific item, as against 27% of the other group, a highly significant effect, $X^2(1) = 38.7, p < .01$.

The SCL group indicated higher rates of deep study usage compared with the third class group, $F(1, 274) = 14.9, p < .01$. This divergence was apparent on each item in this category, except for the item ‘*I make efforts to apply the principles I have learned to solve real life problems*’. The relevant means, showing differences between the two groups is shown in Figure 1.

FIGURE ONE ABOUT HERE

As noted earlier within Methods section, it was apparent that when we compared levels of basic skills to deep skills, then the means for these two types of strategies clearly diverged along the averaged 4-point metric. It was apparent that deep study strategies were endorsed at a lower level than basic study strategies, with means of 2.8 and 3.1, dependent $t(275) = 9.5, p < .01$. The effect size, expressed through Cohen’s d for correlated samples was substantial at 0.81.

This divergence (i.e. reflecting distinction between basic and deep in relative endorsement levels) was itself of differing magnitude for the two groups. Expressed in terms of Cohen's d for correlated samples, with an overall effect size of 0.81 (as noted in the previous paragraph), the effect for the SCL group alone was 0.42, while for the third class students the effect was a remarkable 1.23 (Note: such figures correspond to standard deviation units). In other words, the difference between basic and deep, in terms of the level of student endorsement, was itself far larger in the case of the third class students. This manifest interaction effect can be seen in Figure 1.

Discussion

Through this project we were able to describe ways in which first class and third class students were similar, and ways in which they were different, in relation to their study experience. The two groups appeared relatively similar in their statements about health and sleep. They were also similar in their claimed levels of goal setting activity, when expressed in terms of their likelihood to set goals. That is, both groups were equally likely to state that they did set personal goals. It was apparent that the third class students indicated higher levels of participation within sporting activities, although it should be noted that the level of sports activities reported was relatively low overall for both groups. The first class students claimed to be more likely to apply self-discipline.

It was found that the first class students disclosed higher levels of spirituality, as defined by Bible reading and claiming they participated in spiritual activities. This finding was contrary to the expectations of some Faculty. On the other hand, such a finding is consistent with the pastoral care aims and publically stated goals of the current university setting. Nevertheless, it is important to note that there is no marked 'pressure' or 'compulsion' upon the students to conform with these religious goals. Whether or not this

specific finding will generalise to other contexts remains an open question. But it does suggest that students may derive some benefit from perceiving consistency between their personal beliefs and institutionally respected religious aims.

A significant aspect uncovered in the current dataset is the finding that the third class students were markedly lower in their endorsement of study strategies defined by Faculty as deep study strategies. Whereas the two groups did not diverge greatly in terms of their endorsement of basic study methods, the summa cum laude students were more likely to control their study activities, avoid unnecessary cramming, and ensure that they contained distractions such as social chatting. They claimed to prepare for their study and try to reason critically.

Two interesting anomalies surfaced in the current data which appear to stand in contrast with the gist of the previous paragraph. We found that both groups were equally likely to claim they seek to apply the knowledge they have learnt to real life. And it was also noted that although we had labelled attending lectures as a 'basic' study skill, in fact the two groups diverged markedly on this item. Although attending lecture classes may appear a basic study tactic, it remains a singularly important one, a key attribute to retain, if success at university constitutes an individual's life goal.

A further curious aspect emerged from analyses. The summa cum laude students admitted to higher levels of self-discipline than the third class students. When we looked at the frequency of students who had ticked '*always*' on the questionnaire the levels were respectively 48% and 31%. This specific attribute had hardly figured within our earlier theorising. But, in perspective, the finding appears highly consistent with the research findings into personality factors such as perseverance, self-control, and grit (Duckworth & Goss, 2014; Tangney, Baumeister & Boone, 2004). Tangney et al. found that university students high on their self-control scale had higher GPAs, and we note that several of the items on their scale cite personal self-discipline. Duckworth and Gross add to this literature,

but note a subtle distinction between self-control and motivational grit. Self-control and self-discipline refer to capacity to regulate oneself against temptations and distractions. On the other hand, grit implies tenacious pursuit of a higher goal in the face of natural obstacles and hardship.

Conclusions

Our data are consistent with the notion personal attributes such as self-discipline will actively assist an individual in achieving personal goals. As a topic for research, this area constitutes a viable and rich area for further study, which we see as one of the implications of the present work. However, we can draw some preliminary conclusions. In particular, there is a need for Faculty to feel confident in being able to assist students in a variety of skills pertaining to their studies. Students need to be encouraged to set worthwhile goals, and to recognise the value of being 'gritty' in pursuit of goals, which at times will be spiritual in nature. Students need help and encouragement in identifying and using deep study strategies, specifically ones that go beyond basic study methods. Nevertheless, one 'basic' strategy of huge importance lies in actual class attendance. And furthermore, students need to develop methods to regulate their studies, to use self-discipline and other adaptive strategies which will allow their behaviours and their goals to meaningfully come together.

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REFERENCES

- Duckworth, A., & Gross, J.J. (2014). Self-control and grit: Related but separable determinants of success. *Current Directions in Psychological Science*, 23(5), 319-325.
- Eccles, J.S., Barber, B.L., Stone, M., & Hunt, J. (2003). Extracurricular activities and adolescent development. *Journal of Social Issues*, 59(4), 865-889.
- Hattie, J., Biggs, J., & Purdie, N. (1996). Effects of learning skills intervention on student learning: A meta-analysis. *Review of Educational Research*, 66(2), 99-136.
- Hattie, J.A.C., & Donoghue, G.M. (2016). Learning strategies: A synthesis and a conceptual model. *NPJ Science of Learning*, 1, doi:10.1038/npjscilearn.2016.13.
- Jayanthi, S.V., Balakrishnan, S., Ching, A.L.S., Latiff, N.A.A., & Nasirudeen, A. (2014). Factors contributing to academic performance of students in a tertiary institution in Singapore. *American Journal of Educational Research*, 2 (9), 752-758.
- Morisano, D., Hirsh, J.B., Peterson, J.B., Pihl, R.O., & Shore, B.M. (2010). Setting, elaborating, and reflecting on personal goals improves academic performance. *Journal of Applied Psychology*, 95(2), 255-264.
- Odukoya J.A., Adekeye O., & Okunlola O. (2017). Assessing the effectiveness of mobile learning devices in tertiary institutions: The experience of undergraduates in a Nigerian private university. *International Journal of Interactive Mobile Technologies*, 11 (4), 160-169.
- Oluwatayo, A.A., Aderonmu, P.A., Aduwo, E.B., & Peter, N.J. (2016). Learning environment, motivation and self-regulated learning among students in technical fields. In K. Wallace, (Ed), *Learning environments: Emerging theories, applications and future directions* (pp 93-106). Hauppauge, N.Y.: Nova Science.
- Silliker, S. & Quirk, J. (1997). The effect of extracurricular activity participation on the academic performance of male and female high students. *School Counselor*, 44 (4), 288-293.
- Tangney, J.P., Baumeister, R.F., & Boone, A.L. (2004). High self-control predicts good adjustment, less pathology, better grades, and interpersonal success. *Journal of Personality*, 72(2), 271-324.
- Uba, E., Oteikwu, E.A., Onwuka, E, & Abiodun-Eniayekan, E. (2017). A research-based evidence of the effect of graphic organizers on the understanding of prose fiction in ESL classroom. *SAGE Open*, 7 (2), doi: 10.1177/2158244017709506.
- Zimmerman, B.J., Bandura, A., & Martinez-Pons, M. (1992). Self-motivation for academic attainment: The role of self-efficacy beliefs and personal goal setting. *American Educational Research Journal*, 29 (3), 663-676.

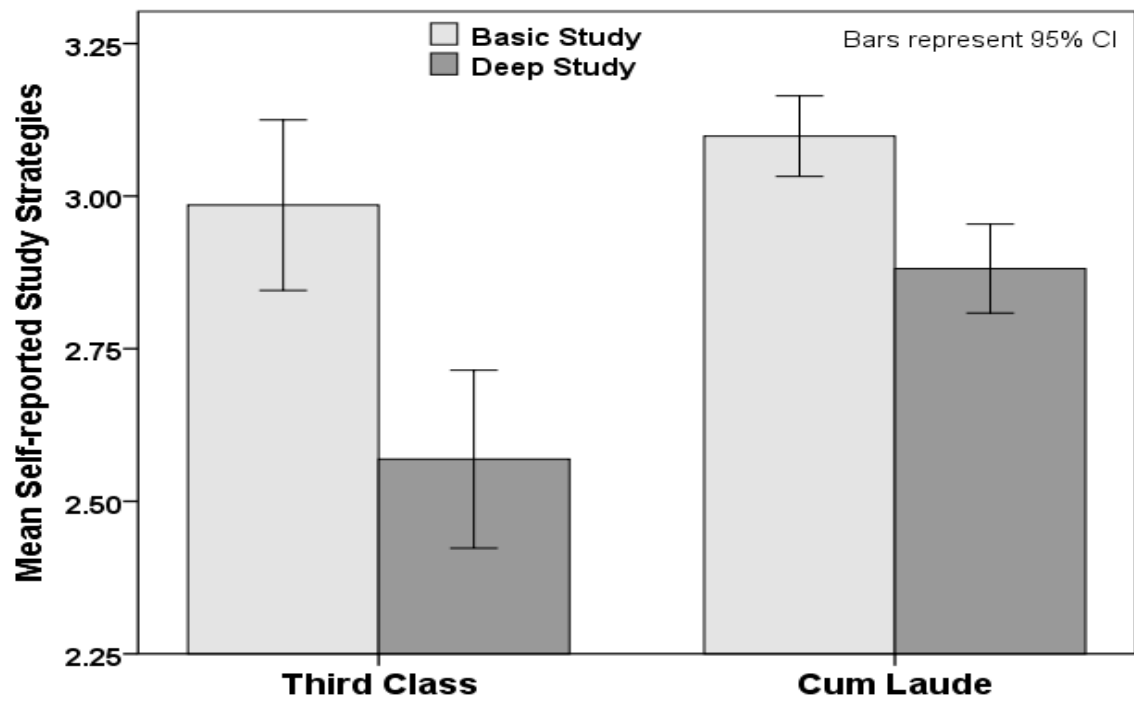


Figure 1. Self-reported study strategies in third class and summa cum laude students

Table 1**Items distinguishing basic study approaches from deep study strategies**

Basic study item	SCL	3rd	Deep study item	SCL	3rd
I use tutorial approach to study, sharing topics in groups	14	15	I study alone for at least 2 hours a day	24	5
I jot key points as I study	64	50	I avoid chatting for too long	28	19
I use the course compact or outline as guide when studying	35	47	I study beyond the lecturer's notes	27	10
I concentrate fully during lectures	23	31	I study beyond the course compact/outline	18	9
I attend all lectures	73	27	I make efforts to apply the principles I have learned to solve real life problems	31	31
I take good notes during lectures	24	26	I engage critical reasoning on my lecture topics. I challenge status quo.	38	26
My friends encourage me to study	43	28	I read/study well before watching video and the likes	24	16
			I avoid cramming. I simply dislike it	36	30

Notes. (a) SCL - summa cum laude, (b) figures down columns represent percentages within each status grouping of students who noted 'always' (or 4) to the item statement.

Table 2**Students' self-reported rating on six attributes**

Variable or statement	SCL [1 st class]	Third class	F (1,274)	Sig
Sports participation	1.94	2.33	7.0	.005
Spirituality	2.5	2.24	6.5	.01
Goal setting	2.62	2.61	<1	<i>ns</i>
'I apply self-discipline'	3.31	3.1	4.4	.037
'I have enough money'	3.05	2.27	5.4	.02
'I am healthy'	3.45	3.39	<1	<i>ns</i>
'I sleep 7 hours a day'	2.27	2.45	1.7	<i>ns</i>

Notes. (a) all ratings expressed as a mean score between 1 and 4, (b) *ns*, not significant.

Lead Author Profile



Dr. Jonathan Odukoya obtained his doctoral degree in *Psychometrics* from the Department of Guidance and Counseling, University of Ibadan in 1991. He lectured briefly in the Department of Psychology, Obafemi Awolowo University, Ile-Ife, Nigeria, before joining the Research Division of the West African Examinations Council [WAEC] in Lagos and subsequently in Accra, Ghana where he served for eleven years. Dr. Odukoya is a Senior Lecturer in the Department of Psychology at Covenant University. He is also the National Coordinator of the Educational Research Network for West and Central Africa [ERNWACA] in Nigeria. He is the lead researcher and psychometrician for this study.

Corresponding Author Profile

Dr. David Omole, is a researcher *cum* university administrator. He served as Director, Consultancy Services; Deputy-Director, Centre for Endowment, Research and Development (CUCERD); and Sub-Dean, College of Engineering, Covenant University. He is currently the Director, Vice-Chancellor's office at Covenant University and an active member of the Covenant University Data Analytics Cluster (CUDAC).

Public interest statement

Identifying the unique attributes that contribute to outstanding academic performance in tertiary institutions is significant in the quest to know why some students are not performing well. An understanding of such attributes helps in evolving appropriate solutions. This is the reason for this study. To understand these unique attributes, 276 students in a Nigerian private university were sampled. Out of thirteen attributes identified, the best performing students [*summa cum laude* students at Covenant University] featured significantly higher scores in seven attributes. It was also observed that female students performed significantly better academically than their male counterparts while also exhibiting more positive personal learner's attributes than their male counterparts. These findings suggest that there are verifiable personal learner's attributes which, if adopted by other students having lower classes of degrees, could significantly enhance their academic performance.

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Cover photo

(photo description: cross-section of Graduates of the Nigerian Private University at a commencement ceremony)



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