

EXPLORING STUDENT ENGAGEMENT PRACTICES AT A SOUTH AFRICAN UNIVERSITY: STUDENT ENGAGEMENT AS RELIABLE PREDICTOR OF ACADEMIC PERFORMANCE

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ABSTRACT

Student engagement is one avenue to explore how the experiences within and beyond the classroom impact student persistence behaviours. This article contributes to the sparse research in South Africa on the correlates of student engagement with academic performance at a Historically Disadvantaged University. The results suggest that engagement practices at this university differ across race and gender and that given the South African history we are able to generalise onto the South African higher education system. Influences on persistence and academic success are complex and require a comprehensive approach which embraces the entire context into which student persistence behaviours are embedded. Student engagement patterns are reliable predictors of academic performance and the trends across race and gender suggest that engagement and academic performance remain differentiated along race and gender.

Keywords: student engagement, retention, persistence; academic performance, race, gender, higher education, student success

INTRODUCTION

Higher Education in South Africa has changed dramatically since the first democratic election in 1994. The higher education system is an open, accessible and responsive system with a diverse student population with a varied preparedness profile, enrolled in flexible degree programmes where engaged pedagogies aim to deliver a reformed curriculum, measured in competencies and outcomes (Scott, Yeld and Hendry 2007).

However, student persistence and retention, measured in variations of ‘success’ and

‘throughput’ have remained elusive (Lewin and Mawoyo 2014). Despite policy and system reviews (such as curriculum and degree reforms, programme extension and introduction of foundation programmes, institutional mergers, changes in admission criteria, increased funding for student fees and residence), student persistence has not shifted dramatically, remains differentiated along race and gender. Academic performance poses an ‘intractable challenge’ (CHE 2014, 9; Cloete, Maassen and Bailey 2015; HESA 2011).

STUDENT ENGAGEMENT IN SOUTH AFRICA

Student engagement provides a useful framework to examine higher education’s promotion of student persistence and retention in South Africa (Strydom 2014; Wawrzynski, Heck and Remley 2012). Student engagement is widely understood as a useful proxy for academic success, persistence and retention. Student persistence is attributed to a wide variety of interacting factors, including those prior to enrolment, teaching and learning pedagogies including classroom and curricular designs, experiences beyond the classroom, peer and academic relationships, as well as campus climate and organisational contexts. Student persistence is not the result of ‘discreet conditions, interventions, and reforms’ (Astin 1993; Pascarella and Terenzini 2005; Reason 2009, 659; Tinto 1993). Research from the USA provides strong support for the notion that student engagement is highly correlated to student persistence (Harper and Quaye 2009; Kuh 2009; Strydom 2014; Trowler 2010; Wawrzynski et al. 2012).

Kuh (2009, 683) defined student engagement as ‘the time and effort students devote to activities that are empirically linked to desired outcomes of college *and* what institutions do to induce students to participate in these activities’ (italics in original). Harper and Quaye (2009) emphasise that engagement is more than just participation and requires dynamic sense-making and responding to the educational context, similar to Funston, Gil and Gilmore’s (2014) emphasis on ‘ontological’ engagement. Trowler (2010) proposed that engagement is conceptualized in behavioural, emotional, and cognitive dimensions. Wawrzynski et al. (2012) explore engagement and integration patterns of students at the Nelson Mandela Metropolitan University (NMMU, South Africa) and argue that a multifaceted approach to the understanding of engagement is necessary to explore the complexities of the South Africa context.

These theoretical conceptualisations of student engagement provide a rich and textured framework of student integration that supports the notion of student persistence and retention as grounded in a complex web of influences. Engagement is a reliable correlate of student

success, providing actionable data on student behaviours and institutional conditions which in turn promote student persistence and retention. Research on student engagement highlights institutional ‘high impact practices, which are educational experiences that make a significant difference to student persistence, learning outcomes, and student success’ (Kuh 2009; NSSE 2007; 2008; 2011; 2012; Strydom 2014, 15).

The multidimensional conceptualization of student engagement affirms that learning is synergistic and ‘cognitive and affective dimensions of development are related parts of one process’ (King and Baxter-Magolda 1996, 163).

Higher education in South Africa is increasingly recognizing the importance of the intersection of the institutional-organisational, with the academic and the personal-social (CHE 2014; Lange 2010; Lewin and Mawoyo 2014; Strydom 2014). This recognition enables a widening of the lens to enable the illumination of the complex interplay of factors which impact student persistence and student retention.

Student engagement literature cogently assert that the goals of student engagement serve the goals of equity and participation, especially if the student engagement framework is conceptualized beyond the normative and focuses on those specific groups for whom engagement with and connection to the academic environment is already a challenge (Nelson, Smith and Clark 2012; Schreiber 2014; Trowler and Trowler 2010).

Student Engagement has emerged over past decade as a reliable predictor of student success (Strydom and Mentz 2010; Kuh 2009) and it is particularly useful for the South African context as it enables a comprehensive picture of influences on student persistence and institutional practices which enable or hinder student success (Wawrzynski et al. 2012).

Our research question focuses on the relationship of student engagement as conceptualised by Kuh (2009) with academic performance. Moreover, we explored gender and race correlates of engagement and academic performance via triangulation. It must be noted that race is understood as a coarse proxy for socio-economic status and prior schooling, this means that race in itself is not rated but only used as a proxy.

DATA AND METHODOLOGY

Research setting: The University of the Western Cape

The University of the Western Cape (UWC) is a middle-sized residential university, located on the outskirts of Cape Town. There are about 20 000 students, 60 per cent of whom are female,

40 per cent Coloured,¹ and 40 per cent Black. The university's history is steeped in the apartheid past when it was designed as a teacher's college 50 years ago and then became 'the intellectual home of the left' during the apartheid regime. Since democratisation in 1994 and being spared any merger with another institution in the early 2000s, it has established itself as a leading university in various niche and research areas in the country and internationally. It is ranked 5th in the country,² ahead of all other Historically Disadvantaged Universities and behind all Historically Advantaged Universities in South Africa. Like other universities in the country (in particular the Historically Disadvantaged ones), UWC struggles with throughput and retention of students.

Research instrument: South African Survey of Student Engagement (SASSE)

This study used the 2013 SASSE online questionnaire as administered by the University of the Free State,³ to collect data. The tool is based on the National Survey of Student Engagement (NSSE), originally developed in the USA, and has been used widely in South Africa since 2009 (SASSE) and across various continents as a reliable measure of student integration and reliable correlate of student success (www.NSSE.indiana.edu). During the pilot phase in 2009 seven South African Higher Education Institutions (HEI) took part in the survey (n = 13 636) and 19 HEIs repeated the survey and/or joined thereafter. The results of the data analysis performed by the UFS are used by institutions to assist students to engage in behaviours which are positively related to academic performance, and to assist HEIs to create opportunities to entice students to engage in behaviours which are highly correlated to academic success (Strydom and Mentz 2010). The tool is 'deeply contextualised' (Strydom 2014) and adjusted to local expressions and terminology. The questionnaire has high internal consistency and reliability (Cronbach $\alpha = 0.7886$) (Strydom 2014), as indicated in Table A1 in the Appendix.

The following information is collected in the SASSE questionnaire: (1) students' participation in educationally purposeful activities; (2) the extent to which students interact with lecturers and their peers as well as the degree to which they engage with diversity; (3) how students perceive the university environment; and (4) background and demographic information of students.

Student Engagement is measured on the basis of four engagement themes, divided into ten indicators (see Table 1).

Table 1: The four themes and ten student engagement indicators in SASSE

Theme	Indicator
Academic challenge	Higher-order learning (HO): amount academic work emphasized challenging learning tasks, including applying learned information to practical problems, identifying ideas and experiences, evaluating information from other sources, and forming new ideas
	Reflective and integrative learning (RI): how often students connected prior knowledge, other modules or subjects, and societal issues; took into account diverse perspectives; reflected on their own views while examining the views of the others
	Learning strategies (LS): How often students enacted basic strategies for academic success, for example, identifying important information in readings, reviewing notes after classes, summarizing subject material
	Quantitative reasoning (QR): How often students engaged with numerical and statistical information across curriculum, and used such information to examine real-world problems, reach conclusions, and evaluate what others have concluded
Learning with peers	Collaborative learning (CL): How often collaborated with others when mastering difficult material, such as explaining materials to others, preparing for exams, working on group projects, and asking for help
	Discussion with diverse others (DD): How often students discussed with people who differ from themselves in terms of economic background, religious belief, ethnicity, or political views
Experience with staffs	Student-staff interaction (SS): How often students had meaningful and substantive interactions with advisors and lecturers, such as discussing career plans, subject material outside class or discussing their academic performance, and working on student groups or committees
	Effective teaching practices (ET): Amount lecturers emphasised student comprehension and learning, by means of clear explanations and organisation, using illustrative examples, and providing feedback that is formative and effective.
Campus environment	Quality of interaction (QI): How students rated their interactions with important people in their learning environment, such as academic staff, student support services, peer learning support, and other students
	Supportive environment (SE): Amount the institution emphasised help for students to persist and learn through academic support programs, encouraged diverse interactions, and provided social opportunities, campus activities, wellness, health, and support for non-academic responsibilities

Source: University of Free State 2015

For each student taking part in the survey, a mean score was derived for each indicator, with a minimum of zero and maximum of 60. For example, there are four questions relating to discussion with diverse others (DD): Question 8a: Discussions with people of different ethnicity; Question 8b: Discussions with people from different economic backgrounds; Question 8c: Discussions with people with different religious beliefs; Question 8d: Discussions with people with different political views. Students were asked to choose from four categories (with the indicator score in bracket): never (0), sometimes (20), often (40) and very often (60). Hence, if a student's answer was 'very often' in all four questions, his mean DD score would be 60, whereas a student whose response was 'never' in all four questions would get a mean DD score of zero.

In order to investigate the students' academic performance in relation to their engagement scores, the students were divided into quintiles (i.e. quintile1 and quintile5 representing the

worse-performing and best-performing 20% of students respectively) by means of their average final mark in 2013. It was derived as the average of the final marks across the modules they enrolled in that year. For instance, if a student enrolled in 5 modules in 2013 and obtained the final mark of 60 per cent, 65 per cent, 70 per cent, 78 per cent and 87 per cent in each module, his average final mark would be equal to 72 per cent $[(60 + 65 + 70 + 78 + 87)/5]$. In case the student did not have a final mark in a module (e.g. the student did not write the final exam due to illness, or did not qualify to write the final exam due to low year mark – in general the student must have obtained a year mark of 40% before being qualified to write the final exam), the year mark was used as a ‘proxy’ for the final mark.

Participants

Undergraduate students at UWC were invited per email to take part. The following students completed the online questionnaire: 41 per cent male; 47 per cent, 45 per cent and 8 per cent of the participants are Blacks, Coloureds and Indians/Whites⁴ respectively. The sample was representative of the overall student undergraduate population. The average age was 21.53 years with a standard deviation of 2.35. The Economic and Management Sciences (EMS) students accounted for the largest proportion of the participants (42%), followed by Arts (28%), Natural Science (20%), and Education Faculties (10%). A total sample size was 868 after incomplete submissions were deleted. Although the response rate was only 6 per cent, it yielded a substantial sample size, and was considered adequate as this type of online survey, presented as a new format and new concepts to students, might have influenced the participation rate.

Analysis

Descriptive analysis and econometric analysis were employed to examine the relationship between student engagement and academic performance. The students’ mean scores in the ten indicators were examined by faculty, gender, and race. Statistical significance tests were conducted ($\alpha = 5\%$) on these scores, before the relationship, if any, between the indicator scores and students’ academic performance across the quintiles were examined. Multivariate econometric analysis was conducted to investigate the impact of the students’ demographic characteristics as well as the extent of student engagement on their academic performance.

EMPIRICAL FINDINGS

University findings

Comparing the mean score of the ten indicator areas across the University (see Figure 1), the UWC students performed the best in the areas of Discussion with Diverse others (DD) and Higher-Order Learning (HO), with mean scores above 40. The mean scores were the lowest for Student-Staff interaction (SS) and Quality of Interactions (QI).

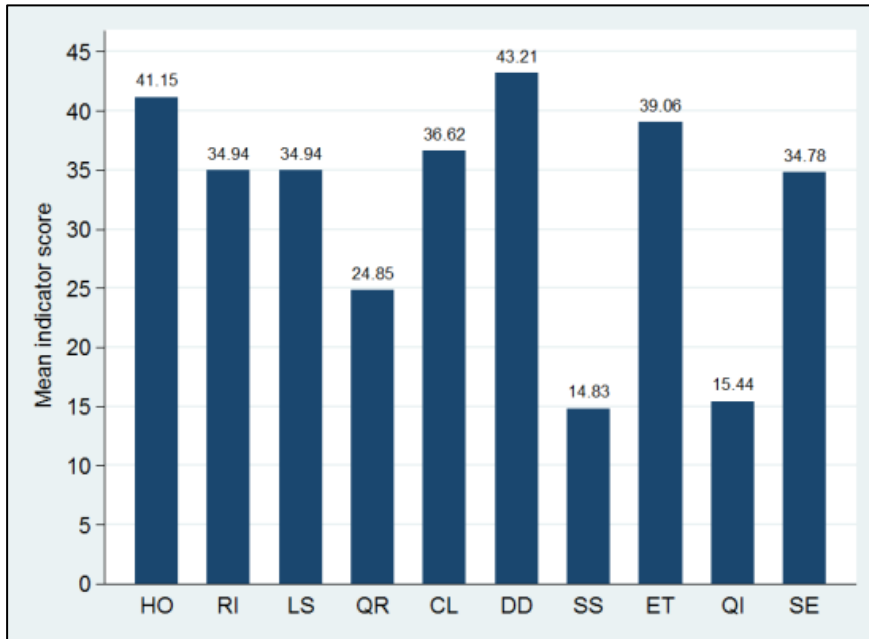


Figure 1: Mean score of each engagement indicator
(Source: Authors’ own calculations using the 2013 SASSE data)

The low score of Student-Staff interaction (SS) and Quality Interaction with significant others (QI) share an interactional dimension across relationships among students, with staff and significant other. This may be a development area for UWC where careful attention should be paid to how staff and students interact on an interpersonal basis and via academic projects.

Although the Student-Staff interaction (SS) and Quality Interaction with significant other (QI) mean scores are significantly low, the Discussion with Diverse others (DD) mean score was high, suggesting that engagement with diverse others is nevertheless high. This needs to be further explored and might suggest that the within-group Coloured and Black diversity range is relatively high, or the interactions among students is across diversity, but does not extend to interactions with staff and significant others. The issue around social and peer relationships seem vexed as Wawrzynski et al. (2012) also found in their study on student involvement at another South African university. They suggested that student involvement in co-curricular activities was correlated to less benefit for peer connections and helping others. However, other

perceived benefits of involvement in activities were in line with literature, such as improved leadership development and enhanced academic work (Wawrzynski et al. 2012).

Findings by faculty

Table 2 presents the mean score of each indicator by faculty, gender and race. The following four key findings emerged from faculty category, with EMS faculty being the reference group: (1) Higher-Order Learning (HO) mean score of Education Faculty students was significantly lower; (2) Reflective and Integrative Learning (RI) mean score of Science students was significantly lower; (3) Quantitative Reasoning (QR) mean scores of Education and Arts Faculty students were significantly lower; (4) Collaborative Learning (CL) mean score of the Arts Faculty students was significantly lower.

Table 2: Mean score of each indicator by faculty, gender and race

	Faculty				Gender		Race		
	EMS	Education	Arts	Science	Male	Female	Black	Coloured	Indian/White
HO	42.08	37.20*	42.09	39.88	40.12	42.10	42.36	40.35	39.86
RI	34.83	37.13	36.69	31.55***	34.93	34.93	34.60	35.46	34.32
LS	34.55	33.10	35.16	36.43	34.11	35.30	35.62	33.80	36.76
QR	28.74	19.45*	18.92**	27.75	27.72	22.71#	26.68	22.52##	25.28
CL	38.67	35.00	34.34**	36.39	36.34	36.95	37.61	35.68	36.37
DD	41.67	44.76	44.33	44.05	42.15	43.85	40.79	44.51##	50.00###
SS	14.39	16.53	15.27	14.28	16.93	13.44#	15.52	13.86	16.27
ET	39.36	39.78	39.54	37.37	39.10	39.05	41.78	36.94##	34.24###
QI	15.58	15.92	15.53	14.82	15.93	15.05	15.67	15.06	16.18
SE	35.88	34.85	34.02	33.53	35.12	34.48	38.30	32.20##	29.32###

Source: Own calculations using the 2013 UWC SASSE data

* The Education students' mean score is statistically significant from the EMS students' mean score at $\alpha = 5\%$.

** The Arts students' mean score is statistically significant from the EMS students' mean score at $\alpha = 5\%$.

*** The Science students' mean score is statistically significant from the EMS students' mean score at $\alpha = 5\%$.

The female mean score is statistically significant from the male mean score at $\alpha = 5\%$.

The Coloured mean score is statistically significant from the Black mean score at $\alpha = 5\%$.

The Indian/White mean score is statistically significant from the Black mean score at $\alpha = 5\%$.

Three of the significantly low indicators are within the theme of Academic Challenge and one in the theme of Learning with Peers and together suggest there might be areas for improvements. First, the results suggest that the Education Faculty students apply, identify, analyse and synthesise information at a significantly lower level than other faculties. These findings reflect aspects of the education undergraduate curriculum in so far as education students may not be expected – at least not as much as students in other programmes – to engage in Higher-Order Learning (HO). This might be a function of curricular content and may be an

area that the faculty wants to address, unless this is aligned to national curricula. A similar result is observed in relation to the Science Faculty which seems to have generated a significantly low score on the Reflective and Integrative Learning (RI). As Higher-Order and Reflective and Integrative Learning are important indicators of academic learning, both faculties may want to review aspects of the curriculum in order to address this area of development. The faculties compared on the Learning Strategy indicator and the Education and Arts faculty were significantly lower on the Quantitative Reasoning (QR), which might be related to curriculum content, both faculties relying less on Quantitative Reasoning.

In the category of Learning with Peers and Collaborative Learning, the Arts students reflected less Collaborative Learning compared with other faculties. This is an area which requires attention and can be addressed via course and curriculum design, especially in the supplemental instruction and tutorial spaces.

Findings by race

Coloured students scored significantly lower than Black students on three engagement indicators. These are Quantitative Reasoning (QR), Effective Teaching Practices (ET) and Supportive Environment (SE). This means that Coloured students evaluated their experiences as engaging in less exploration using quantitative reasoning, they considered the teaching they experienced as less clear, less emphasis on comprehension and less formative feedback. Coloured students also experienced the campus environment as less supportive.

Regarding the lower QR and ET mean scores, the results might reflect staff engaging with black students more effectively, or it might relate to Black and Coloured students having different expectations and benchmarks as they typically come from different high school backgrounds. Black students, as a generalisation, typically come from less well-resourced school systems and hence may have less expectations and thus experience the UWC environment as more effective.

It appears that Coloured students experience the campus environment (SE) as consistently less supportive than Black students on average. Coloured students perceive less support for academic achievement, less emphasis on support programmes, on overall well-being, assistance in managing non-academic demands, less emphasis on joining campus and societal events. Again, as in the perceptions around Effective Teaching Practices (ET), this might be reflective of different expectations, given the differences in pre-university high school context. However, it might also be reflective of institutional culture, where the institution might be particularly

concerned about performance of Black students, perhaps to the neglect of Coloured students.

Regarding the mean engagement score of Discussion with Diverse Others (DD), Black students scored significantly lower than Coloured students. This reflects how often students engage with peers who are perceived different along categories of economic, religious and political views and race and gender. The results suggest that UWC Coloured students are more likely to engage with diverse others than their Black student peers. Moreover, the Coloured group at UWC has a high in-group variance, and the data may reflect this diversity within the group of Coloured students. However, as universities are not exempted from the scars of our history, our peer-to-peer and student-and-staff interactions, as well as our campus environment may tend to be segregated along lines of race, as is reported from other higher education contexts in South Africa (Cross, Shalem, Backhouse and Adam 2009; Jansen 2009).

When comparing the Indian/White students to Black students, Table 2 indicates that the former group scored significantly higher on average in DD (Discussion with Diverse Others), but significantly lower in ET (Effective Teaching Practices) and SE (Campus Environment). Regarding the DD (Discussions with Diverse Others) indicator, White and Indian students seem to engage across diversity more readily. Perhaps, as White and Indian students are a minority at this university (10%) there might be a propensity towards engaging with peers across demographic indicators. Regarding the ET (Effective Teaching) and SE (Campus Environment) indicators, the results might indicate that students are indeed treated differently across race at this institution which leads White and Indian students to assess teaching, learning and the campus environment as less effective and supportive. Alternatively, one might speculate that White and Indian students have a more privileged schooling experience, and thus assessing their UWC teaching, learning and campus environment against a higher benchmark (Carnoy, Chisholm and Chilisa 2012; Van der Berg 2007).

Conversations with diverse others (DD) is a high-impact practice and UWC may want to use the inherent advantage of this natural resource more intentionally. This aspect of engaging with diversity is analogous to the component of peer group environment in Reason's model (2009) and can be compared to aspects of Tinto's notion of integration (1998), both of which foreground peer relationships as a critical influence on student persistence. According to these models it seems that the Coloured, White and Indian students are better integrated into the institution compared to their Black peers.

Findings by gender

The results in Table 2 indicate that there are two engagement indicators with significant gender difference. On average, the male students scored significantly higher than female students for Quantitative Reasoning (QR) which reflects frequency of students' engagements with quantitative information across curriculum and opportunities to explore and evaluate real-world problems. For the engagement indicator Student-Staff Interaction (SS) which explores how often students and academic staff have meaningful and significant exchanges, talking about careers, performances and collaborating in groups or committees, it emerges that the mean score is higher for male students.

Female students' perceptions that they engage in less quantitative reasoning may be reflective of gender typical responses and of introjected stereotypes. It is recommended that faculty and department discussions examine these findings and see where perhaps inadvertently gender stereotypes are reinforced, it might be useful to interrogate implicitly held stereotypes by staff, and one may want to examine the gender balance of staff and other gender related message prevalent within the university culture. Reason (2009) argues that a campus culture which minimises or undermines a particular group based on race or gender, is likely to undermine that group's persistence behaviours.

The relatively poor score on student-staff interaction may be related to gender-based inhibitions in terms of approaching staff, such as power differential or reluctance to engage in gender untypical ways such as seeking contact between female students and male staff members which may be misconstrued by either part. It is recommended that there is a campus-wide discussion about what kinds of behaviours are appropriate and expected of students so that there is a deliberate attempt at culture building and interaction across issues of gender.

According to Reason (2009) institutional cultures which are collegial and collaborative tend to enable higher persistence behaviours and it might be useful to examine how UWC can shift the gender imbalances as suggested by the data by promoting practices which engage students and staff across gender into collaborative projects.

Relationship between engagement scores and academic performance

The section on methodology above explained how the average final mark and the quintile variable were derived and that quintile1 is the worst and quintile5 is the best performing 20 per cent of the students in that group. Table 3 shows the mean, minimum and maximum average final mark of students in each quintile.

Table 3: Descriptive statistics on the average final mark in each quintile

Quintile	Proportion (%)	Mean	Minimum	Maximum
Quintile 1	20	44.52	3.50	52.42
Quintile 2	20	55.56	52.43	58.43
Quintile 3	20	60.55	58.44	62.83
Quintile 4	20	65.32	62.85	67.92
Quintile 5	20	72.80	68.00	90.80
All	100	59.73	3.50	90.80

Source: own calculations using the students' academic results from the university marks administration database.

In terms of the gender and race profile our data analysis showed that as we move across the better-performing quintiles, the share of female students and non-Black students increases (see Table 4). We find females account for almost 70 per cent of the students in the best performing quintile, despite the fact that female students make up 59 per cent of the overall sample. Also, in the best performing quintile 71 per cent are either Coloured or Indian/White students, despite the fact that they account for 53 per cent of the overall sample.

Table 4: Demographic information of students in each average final mark quintile

Quintile	Gender		Race		
	Male (%)	Female (%)	Black (%)	Coloured (%)	Indian/White (%)
Quintile 1	51.2	48.9	64.9	31.6	3.4
Quintile 2	42.8	57.2	56.1	38.7	5.2
Quintile 3	45.7	54.3	43.4	52.0	4.6
Quintile 4	34.7	65.3	41.6	48.0	10.4
Quintile 5	33.0	67.1	28.9	53.2	17.9
All	41.5	58.5	47.0	44.7	8.3

Source: own calculations using the students' academic results from the university marks administration database.

Using students in quintile 1 as the reference, the comparison of the engagement data and the academic performance by quintile reveals that the top 2 quintiles are associated with significantly high mean scores on Higher-Order Learning (HO), Effective Learning Strategies (LS) and Discussions with Diverse Others (DD), while the mean score on Collaborative Learning (CL) is significant only in quintile 4 (see Table 5). These results are in line with research about effective students' behaviours which suggest that good academic challenge and learning with peers are key contributors and/or correlates to good academic performance. This

finding is also supported Wawrzynski et al.'s South African study which found that students' involvement promoted academic achievement (2012).

Table 5: Mean score of each engagement indicator area by average final mark quintile

	Quintile 1	Quintile 2	Quintile 3	Quintile 4	Quintile 5	All
HO	39.12	38.91	40.83	44.28 [#]	43.15 [#]	41.24
RI	33.53	33.43	35.69	36.09	36.24	34.96
LS	31.91	35.83	34.07	36.01 [#]	36.96 [#]	34.90
QR	25.89	26.11	22.79	26.59	22.18	24.72
CL	34.56	36.42	37.21	38.47 [#]	36.72	36.65
DD	39.94	40.73	43.44	45.59 [#]	46.59 [#]	43.22
SS	14.94	12.24	15.09	16.08	16.03	14.84
ET	39.44	38.86	37.95	40.23	38.38	38.98
QI	14.91	14.58	15.45	16.41	15.91	15.45
SE	35.20	34.75	34.84	35.55	33.71	34.83

Source: own calculations using the students' academic results from the university marks administration database and SASSE 2013 data.

[#] The mean score is statistically significant at alpha = 5%, compared with the mean of the reference group (Quintile 1)

Multivariate analysis

The final part of this article discusses the multivariate econometric analysis which investigated the impact of the students' demographic and study characteristics as well as the extent of engagement on their academic performance. Ordinary Least Squares (OLS) regressions are conducted, with the independent variables in the regressions being home language (reference group: any African language), race (reference group: Black), gender (reference group: male), whether the student was disabled, whether the student stayed at residence on campus, whether the student was senior (2nd and 3rd year study level), faculty (reference group: EMS), age in years, age in years squared, each student's engagement indicator score, as well as the average student engagement score across all 10 indicators. Regarding the latter variable, it was simply derived as the average of the 10 indicator scores, that is, each indicator carries an equal weight of 1/10.

The results are presented in Table 6. First, students whose home language is English performed significantly better by approximately 3 percentage points compared with those speaking African languages. It can also be seen that Indian/White students are associated with significantly better academic performance (nearly 7 percentage points higher before the engagement variables are included and approximately 5 percentage points higher after the latter variables are added, compared to Black students). Female students are also found to perform

significantly better (by about 2 percentage points). These findings on gender and race conform to what was observed in Table 4 earlier. In addition, students staying at campus residence performed significantly better while senior students' average final mark was significantly lower (by approximately 4 percentage points) when compared to first-year students. It can also be seen that the Education, Arts and Science faculty students performed significantly better than the EMS students by approximately 2–3 percentage points.

Table 6: Multivariate regressions

Dependent variable: Average final mark of the student in 2013			
Independent variable	[I]	[II]	[III]
Dummy: Home language being English	2.861*	3.470*	3.482*
Dummy: Home language being Afrikaans	0.253	1.629	1.533
Dummy: Coloured	2.235	1.176	1.525
Dummy: Indian or White	6.873***	4.440**	4.997**
Dummy: Female	2.447***	1.823**	2.168***
Dummy: Having disability problem	-2.529*	-2.051	-2.289
Dummy: Staying at campus residence	2.106***	1.424*	1.497*
Dummy: Senior students	-3.916***	-3.914***	-3.820***
Dummy: Education faculty	3.026**	3.388**	2.617**
Dummy: Arts faculty	2.267***	2.232**	2.111**
Dummy: Science faculty	2.950***	2.105**	2.130**
Age in years	-3.603	-3.640	-3.623
Age in years squared	0.088	0.084	0.085
Score: Higher-order learning (HO)		0.099***	
Score: Reflective and integrative learning (RI)		-0.041	
Score: Learning strategies (LS)		0.038	
Score: Quantitative reasoning (QR)		-0.019	
Score: Collaborative learning (CL)		0.066**	
Score: Discussion with diverse others (DD)		0.013	
Score: Student-staff interaction (SS)		-0.004	
Score: Effective teaching practices (ET)		-0.047	
Score: Quality of interaction (QI)		0.077	
Score: Supportive environment (SE)		-0.015	
Score: Average of the 10 indicators			0.136***
Constant	92.503***	90.793**	90.798**
R-squared	0.1356	0.1554	0.1346
Adjusted R-squared	0.1224	0.1268	0.1170
Number of observations	868	868	868

*** Significant 1%

** Significant at 5%

* Significant at 10%

In regression [II], the 10 student engagement indicator scores are included as additional

explanatory variables, and it can be seen that two indicators have a significantly positive impact on the student average final mark, namely Higher-Order Learning (HO) and Collaborative Learning (CL). Finally, in regression [III], instead of adding the 10 indicator score variables, the average engagement indicator score variable is included, and the results indicate that there is a positive and significant relationship between student engagement and academic performance.

CONCLUSION

Since democratisation in 1994, South Africa has attempted to address the poor overall student success rates. Student engagement as part of a comprehensive framework on factors which influence student persistence has not been widely explored in South African higher education. In this study we considered engagement indicators as part of a comprehensive conceptualisation of understanding student persistence and we thus contribute to the paucity of research on the complex web of factors which impact on South African student success rates. This study examined student engagement at a South African university and results show that engagement patterns are different across race and gender at this university and are highly correlated to academic performance.

The findings suggest that engagement behaviours differ across race in interesting ways. It appears that overall, White, Indian and Coloured students perceived campus as less supportive, commented on the quantitative and academic challenge in more negative terms and assessed the teaching practices as lesser effective than their Black peers. Given the South African history and pre-university scholastic and school experiences of our students, it is possible that the expectations are different and students of different race enter university with different expectations and then evaluate the support and academic environment differently. Perhaps, as Jansen (2009) and Cross et al. (2009) point out, South African higher education hasn't yet overcome the injurious past and we operate in 'legally desegregated but socially segregated spaces' (Jansen 2009, 136).

Similar inequities are faced by female students who seemed to have experienced barriers in terms of engaging in quantitative reasoning and relationships with significant others on campus. These gender imbalances might be reflective of introjected stereotypes, but equally, it may reflect the gender discord endemic in the South African population from which the university population and context are not protected.

The recommendations for this South African university include institutional discussions

which aim to explore the relationship issues between all stakeholders, especially across race and gender. An institution-wide conversation promotes organisational behaviours which are collegial and systemic, two organisational practises which facilitate student persistence (Reason 2009).

The exploration on the correlates of academic performance and engagement underscore the validity of engagement data predictors, and highlights that student engagement is significantly and positively correlated to academic performance.

Overall, we found a significant and positive relationship between student engagement and academic performance which underscores the validity of the engagement framework. Universities are encouraged to take heed of these findings, which support the argument, that integration and engagement are important ingredients in improving academic performance.

The two most significant engagement indicators are Higher-Order Learning (HO) and Collaborative Learning (CL), and this finding demonstrates that the better-performing students engage in high-order learning and engage in collaborative learning – two academic strategies which are highly correlated to academic success.

In the broader perspective, this study highlights that influences on student persistence are complex and require a comprehensive approach. Factors beyond the classroom and the academic challenge, which include peer environment and the individual experience, the campus culture and climate as well as the organisational context, contribute towards student persistence. More research is required to explore the critical factors which impact on persistence behaviours of students by race and gender, so as to ensure that students from all gender and race groups are equally engaged, leading to equitable student success.

The legacy of the apartheid history in South Africa is the racialized performance distributions and it seems that these also manifest at this university, much like found at other universities in the country (Cross et al. 2009; Jansen 2009; Warwzynski et al. 2009). Since democratisation in 1994 South African higher education has attempted to address issues of gendered and racialized persistence and success rates of students and we need to consider the complex interplay of factors across the academic-personal-social-institutional context in order to positively impact the national success rate. South Africa will move more firmly towards social equity, when university success rates liberate themselves from race and gender based inhibitors. Notions of student engagement provide a useful, actionable and measurable framework for impacting correlates of academic performance thus improving persistence behaviours of South African students.

NOTES

- 1 These racial categories, including Coloured, Indian, White and African are used by national Higher Education Management Information System, DHET, and describe African and mixed-descent race. The use of these categories does not imply authors' agreement with these.
- 2 According to the January 2015 edition of the *Webometrics Ranking of World Universities*.
- 3 Bloemfontein, South Africa, www.ufs.ac.za
- 4 See endnote 2 for comment on race. The DHET HEMIS data use these categories.

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APPENDIX

Table A1: SASSE Reliability

Scale	Cronbach's alpha
Higher-order learning (HO)	0.799
Reflective and integrative learning (RI)	0.778
Learning strategies (LS)	0.814
Quantitative reasoning (QR)	0.679
Collaborative learning (CL)	0.713
Discussion with diverse others (DD)	0.816
Student-staff interaction (SS)	0.788
Effective teaching practices (ET)	0.818
Quality of interaction (QI)	0.776
Supportive environment (SE)	0.869

Source: Strydom 2014