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Understanding Factors that Influence At-Risk Student Perceptions of Teaching and Learning Environments at University

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Abstract

This study examines factors influencing at-risk students' perceptions of teaching and learning at a South African university. Using the Experiences of Teaching and Learning Questionnaire (ETLQ), data were collected from 631 undergraduate students identified as at risk of not completing their degree programmes within the stipulated minimum periods. Structural equation modelling was used to test a theorised model of factors associated with student perceptions. The findings suggest that the perceptions of at-risk students regarding teaching and learning environments are significantly related to assessment practices and degree programme demands. However, there was insufficient evidence to support associations between student perceptions and organisation and structure, teaching and learning approaches, or lecturer support. The initially theorised model showed a poor fit, necessitating the development of a revised model. These findings underscore the importance of considering assessment design and programme workload when developing teaching and learning interventions for at-risk students. This study contributes to research on enhanced teaching and learning environments by applying the ETLQ in a different cultural context, offering insights for improving educational quality in higher education settings.

Keywords: Constructive alignment, ETLQ, structural equation modelling, student perceptions, teaching and learning

Introduction

The study utilizes the established Experiences of Teaching and Learning Questionnaire (ETLQ), which has been previously validated in Western contexts, to investigate at-risk students in a South African university setting. This addresses a gap in research on how cultural and systemic factors (e.g., post-apartheid massification, first-generation students) shape perceptions. Over the last quarter-century in South Africa, from the end of the apartheid system to the current democratic system, there has been a notable transformation in the higher education space, impacting both policy and practice. One such transformation has been the shift from elite to mass access to higher education (Akoojee & Nkomo, 2007; Badsha & Harper, 2000). The more recent student protests in 2015/16, which led to the Fees Must Fall movement, resulted in the implementation of a free education policy in higher education. This shift in policy resulted in the first cohort of students benefiting from it in 2017. The free education policy has significantly contributed to efforts to increase access to higher education (Allais, 2017). The increased student numbers in higher education institutions have reduced the previously homogeneous student cohort that existed in these institutions, changing the academic landscape of higher education in South Africa. Emphasis has now been placed on teaching and learning approaches, improving access through the introduction of access/foundation programmes, enhancing retention and throughput, providing academic monitoring and support, offering writing assistance, leveraging ICTs to enhance the educational experience, promoting academic literacy, and fostering workplace readiness. An increase in access to higher education comes with its own challenges that can be associated with this growth, such as financial constraints, administration, student recruitment and selection, curriculum, forms of instruction, and workplace

readiness (Trow, 1973). Despite numerous efforts to enhance the environment in higher education institutions over the years, there is limited empirical evidence of the impact of these changes. It is unclear whether these changes create effective student teaching and learning environments or help identify factors that contribute to developing high-quality teaching and learning environments for undergraduate students. A unique aspect of this study is that it tests the experiences of teaching and learning questionnaire in a different cultural environment (Entwistle et al., 2002), specifically in a university in South Africa.

The Teaching and Learning Questionnaire (ETLQ) experiences present a new concept in educational assessment, which enables a comprehensive evaluation of student involvement and learning outcomes. The psychometric evaluation by Hosseini, Jalali, and Salari (2022) posits that the modified ETLQ is reliable and valid for different populations, including nursing students in Iran. The ETLQ indicates its adaptability in various educational settings. The adaptability enhances educational practices by enabling lecturers to modify their teaching approaches in response to students' learning dynamics. O'Neill et al. (2023) offer validity evidence which enhances the position of ETLQ as a fundamental assessment tool for evaluating quality learning experiences. The systematic review demonstrates how student feedback serves educational practices by creating a continuous improvement cycle within academic institutions. Merchant and Haskowitz (2024) extends this concept by studying the ETLQ factorial structure to uncover essential underlying constructs that help analyse student involvement at a more detailed level. The school-based management initiatives, combined with technology-based learning, discussed here, can leverage ETLQ ideas to enhance instructional methods in mathematical education. The work of Hosseini and Perweiler (2019) underscores the need for innovative teaching methods that cater to the current needs of students. The ETLQ enhances educational practices while simultaneously advancing knowledge about the determinants of student learning outcomes.

'At-Risk' Students and the Teaching-Learning Environment

This study examines students classified as 'at-risk', those who are likely to fail to complete their degree programmes within the university's minimum stipulated timeframes due to delays in progression caused by factors such as module failure or carrying a module load below the recommended minimums. Multiple obstacles affect the educational journey of at-risk students and their likelihood of degree completion.

Student engagement is significantly shaped by the learning environment. A dynamic teaching system, combined with adequate support, fosters students' sense of belonging and commitment (Räisänen et al., 2022). First-year students experience heightened disconnection during their transition to university, as transitional difficulties intensify feelings of separation (Korhonen, 2021). Furthermore, demographic characteristics, including age, socioeconomic status, and prior educational experiences, strongly influence both academic achievement and retention (Kymäläinen et al., 2024). These differences require institutional strategies that create supportive educational environments for students from diverse backgrounds.

Students who feel academically disadvantaged tend to perceive their educational experiences negatively, which can lead to increased academic struggles (Sharp et al., 2019). At-risk students often face emotional challenges that hinder their full participation in academic and social interactions. Rowe and fitness (2018) demonstrate that emotional involvement is a central component of the overall learning process; therefore, prioritizing emotional well-being through counselling and peer support systems can help students develop healthier perceptions of their learning environment. Self-regulation abilities also directly influence how students approach their learning in challenging academic situations. Research by Häsä et al. (2024) suggests that students facing difficulties often struggle to manage their study habits, leading to suboptimal learning methods. Educators can address this through strategies such as time management

workshops and goal-setting activities that help students develop self-regulation skills.

Staff teaching practices also influence students' educational development. Alvarenga (2020) demonstrates that teaching efficacy and student engagement are directly correlated with faculty stress levels, suggesting that faculty well-being is crucial for student success. High stress among faculty members can lead to decreased student engagement, particularly affecting students who require additional academic support. Professional development focused on faculty engagement and stress reduction can therefore improve instructional environments.

Teaching and learning must be understood from a holistic systems perspective. As Reigeluth (2013, p. 6) notes, instruction is "anything that is done purposely to facilitate learning." Several scholars (Biggs, 1993; Von Bertalanffy, 1968) view teaching as a complex system comprising constituent components: the teacher, the student, student-based activities, outcomes, assessments, and the classroom itself. Assessments must align with curriculum objectives to support improvements in teaching and learning (Frederiksen & Collins, 1989). Valid assessments should encourage students to develop the cognitive abilities the assessments are designed to measure. Cohen (1987) found that when curriculum objectives are appropriately aligned with assessments, the effect size of assessment results improves by up to four times compared to non-aligned instruction. The scholar argues that deficiencies in education are not necessarily due to ineffective teaching but may result from poor alignment between what was planned, what was taught, and what is assessed. Biggs (1996) further argues that teaching methods should engage students in tasks that mirror the performance expected by curriculum objectives.

Theoretical framework

This study draws on the framework of constructive alignment (Biggs, 1996), which combines a constructivist approach to learning and instructional design, focusing on the alignment of outcomes-based teaching. The constructive alignment framework is the lens used to understand at-risk students' perceptions of their teaching and learning environment. The study investigates the factors that influence at-risk student' perceptions of their teaching and learning environment at university.

Ertmer and Newby (1993) Identify the environmental condition as the most influential factor that influences teaching and learning. Fraser (1998, p. 3) defines a learning environment as "social, psychological and pedagogical contexts in which learning occurs and which affect student achievement and attitudes". The motivation for this study is drawn from the Enhancing Teaching and Learning Environments (ETL) Project. Entwistle et al. (2002) identified the project's aim as investigating the influences of teaching and learning environments to promote student engagement, thereby enhancing the quality of teaching and learning. Student perceptions of their teaching and learning environment are a direct consequence of their learning experiences. This includes their natural environment, such as the departments and actual degree programme (Ramsden, 1997). In this study, focus is mainly placed on the constructs formed by the students in the teaching and learning environment, although the structure and organisation will be investigated for their influence. Associations can be drawn between students' perceptions of teaching and the quality of their learning (Entwistle & Tait, 1990; Ramsden & Entwistle, 1981). Veblen (1894) expounds that a sardonic critique of higher education institutions in their attempt to increase efficiency had destroyed scholarship. Veblen blames the cold and unfriendly relationship between students and staff, as well as the existence of rigid assessment practices. Entwistle and Ramsden (1983) assert that students' prior experience results in varying ways in how students study. The authors also argue that prior experience impacts the different perceptions of students' teaching and learning environment, which is a similar finding to the works by Saljo (1979). In summary, Prosser and Trigwell (1999) identify perceptions of teaching as one of the most direct influences on the quality of learning. Some scholars (Entwistle, 1998a, 1998b; Ramsden, 1997) explain that students' perceptions of teaching and assessments directly affect their learning, beyond the actual teaching and assessment procedures.

One of the main reasons for using the ETLQ questionnaire was its multidisciplinary focus (Entwistle & Entwistle, 2003), which was suitable in this case, as the study population consisted of at-risk students in the College of Law and Management Studies, spanning eight degree programmes. The ETLQ questionnaire also covered several broad areas, with a focus on approaches to learning and studying, experiences of teaching and learning, learning experiences, and expectations from the degree programme. For the purposes of this study, the focus is on one section of the questionnaire, experiences of teaching and learning. This section contains the following variables (in bold), which form the basis of the analysis:

Organisation and Structure (OS)
OS Q1 The topics seemed to follow each other in a way that made sense to me in the modules.
OS Q2 We were given a good deal of choice over how we went about learning.
OS Q3 The modules were well organised and ran smoothly.
Teaching and Learning (TL)
TL Q1 The handouts and other materials we were given helped me to understand the modules.
TL Q2 I could see the relevance of most of what we were taught in my modules.
TL Q3 We weren't just given information; academics explained how knowledge is developed.
Assessment
AS Q1 It was clear to me what was expected in the assessed work for my modules.
AS Q2 I could see how the set work fitted in with what we were supposed to learn.
AS Q3 The feedback given on my work helped me to improve my ways of learning and studying.
Degree Programme Demand (DPD)
DPD Q1 The rate at which new material was introduced.
DPD Q2 The ideas and problems I had to deal with.
DPD Q3 The skills or technical procedures needed in the modules.
DPD Q4 The amount of work I was expected to do.
Lecturer Support (LS)
LS Q1 Lecturers tried to share their enthusiasm about the modules with us.
LS Q2 Lecturers were patient in explaining things which seemed difficult to grasp.
LS Q3 Lecturers helped us to see how you are supposed to think and reach conclusions in the modules.
Students Perceptions (StudentPer)
SES Q1 I found most of what I learned in this course unit really interesting.
SES Q2 Talking with other students helped me to develop my understanding.
SES Q3 The modules provided plenty of opportunities for me to discuss important ideas.

The Research Objectives

The objective of this study was to explore the factors that influence at-risk students' perceptions of their teaching and learning environment, thereby improving the students' perceptions of teaching and learning at university. More specifically, the study aims to:

- Identify factors that significantly contribute to understanding at-risk students' perceptions of teaching and learning at university
- Test the theorised model put forward for understanding at-risk student perceptions of teaching and learning at university

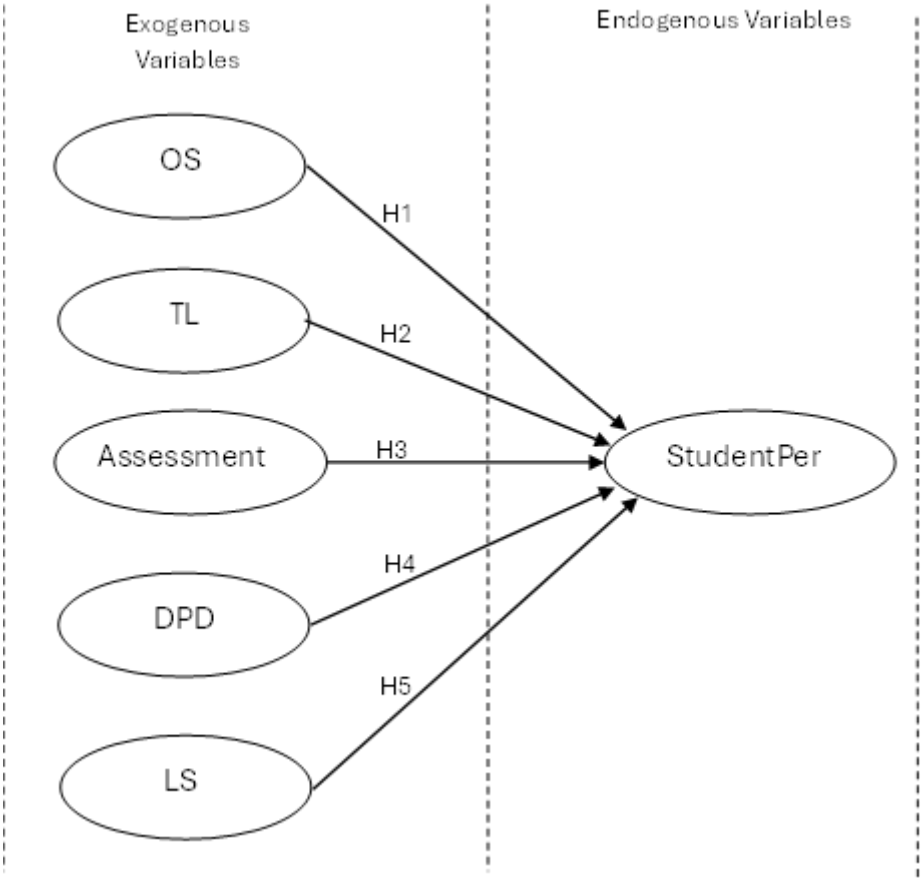

Figure 1: Theorised Model

The following research hypotheses are put forward and form the basis of the analysis:

Organisation and structure (OS)
H1: Organisation and structure has a significant influence on at-risk student's perceptions of teaching and learning at university.
Teaching and learning (TL)
H2: Teaching and learning has a significant influence on at-risk student's perceptions of teaching and learning at university.
Assessment (Assessment)
H3: Assessment has a significant influence on at-risk student's perceptions of teaching and learning at university.
Degree programme demand (DPD)
H4: Degree programme demand has a significant influence on at-risk student's perceptions of teaching and learning at university.
Lecturer support (LS)

H5: Lecturer Support has a significant influence on at-risk student perceptions of interaction amongst themselves at university.

Methods

Sample and sampling

From a population of 2,651 at-risk students, a sample of 631 was selected for the survey. This sample size was determined using a 95% confidence level, a 5% margin of error, and a 50% response distribution.

Ethical considerations

Ethical clearance was obtained from the institution under study. Participants received informed consent letters explaining that participation was voluntary and that confidentiality would be maintained throughout the research process.

Instrument

Data were collected using the Experiences of Teaching and Learning Questionnaire (ETLQ), developed by the Enhancing Teaching and Learning Environments in Undergraduate Courses (ETL) Project team (Hounsell et al., 2005). The ETL Project was a five-year initiative (2001–2005) conducted under the Teaching and Learning Research Programme of the UK Economic and Social Research Council. The project aimed to develop a deeper understanding of undergraduate courses and to investigate factors that impede high-quality learning at this level. The ETLQ has demonstrated established construct validity and cross-disciplinary applicability through its implementation across various higher education settings.

Analytical approach

A theorised model was developed to examine the unobserved variables identified in this study. Structural Equation Modelling (SEM) techniques were employed to test the resulting hypotheses. SEM was selected for its confirmatory nature (Byrne, 2013, 2016; O'Rourke & Hatcher, 2013) and its integration of multiple multivariate analysis techniques within a single model-fitting framework. The versatility of SEM, including its capacity for model validity testing and path analysis, made it a suitable analytical choice for this study.

Validity and reliability

All latent constructs, including Assessment and Degree Programme Demand, achieved acceptable internal consistency reliability, with Cronbach's alpha (α) values exceeding 0.70. The measurement model was validated using AMOS v.25. Initial goodness-of-fit indices (CFI = 0.924; SRMR = 0.046; RMSEA = 0.059) met established benchmarks (Hu & Bentler, 1999). The revised SEM model demonstrated improved fit (CFI = 0.969; SRMR = 0.044; RMSEA = 0.049), supporting the structural validity of the tested relationships. These procedures confirmed both the psychometric rigour of the instrument and the statistical reliability of the collected data.

Results and Discussion

The quantitative data collected using the Experiences of Teaching and Learning Questionnaire (ETLQ) were analysed with the statistical package Analysis of Moment Structures (AMOS) version 25. The hypothesis developed as the basis for the analysis was also tested, and a path diagram was produced (Figure 2) showing the resulting standardised weights for each path. The measures from the path analysis of the theorised model are presented in table format (Table 1), which also shows the significance of each path.

Using AMOS, Structural Equation Modelling (SEM) techniques were applied to test the validity of the theorised model (Figure 1), thereby performing confirmatory analysis. The validity of the theorised model was assessed by analysing the model's fit against the data collected for the study. The model fit measures provided a point of comparison against recommended thresholds (Hu & Bentler, 1999), which are presented in table format (Table 2). The acceptance

or rejection of the theorised model was based on these measures. The multiple model fit measures produced in the SEM analysis include CMIN/DF, Confirmatory Fit Index (CFI), Standardised Root Mean Square Residual (SRMR), Chi-square, Root Mean Square Error of Approximation (RMSEA), and p of Close Fit (PClose), which together form the various goodness-of-fit indices output by AMOS (Byrne, 2013). Collectively, the goodness-of-fit indices offer multiple perspectives on understanding the model's fit to the data collected in the study.

Hu and Bentler (1999) provide recommended thresholds for good model fit. They recommend a CMIN/DF between 1 and 3, a Confirmatory Fit Index (CFI) above 0.9 as acceptable and above 0.95 as excellent, and a Standardised Root Mean Square Residual (SRMR) below 0.08 as excellent. A Root Mean Square Error of Approximation (RMSEA) below 0.08 is considered acceptable, and below 0.06 is considered excellent, with a p of Close Fit (PClose) above 0.05 also regarded as excellent. These cut-off criteria for fit indices are similarly recommended by other authors (Byrne, 2013; Newsom, 2012).

The resulting structural equation modelling output for the analysed theorised model revealed a poor p-value fit (significant) of 0.012. Although the other goodness of fit tests yielded acceptable results, as shown in Table 2, the combined analysis of the model p-value and the path analysis (significance of the various identified paths to the endogenous variable) led to the conclusion that the theorised model was not a good fit and modifications were needed to improve model fit. A revised model was then proposed (Figure 3). A discussion of the revised model and its implications for the teaching and learning literature followed.

The analysis of the theorised model produced a path diagram (Figure 2), showing standardized estimates and loadings of the measured variables for each exogenous variable. These results are presented in Table 1 and show that the exogenous variables Assessment and Degree Programme Demand significantly influence at-risk students' perceptions of teaching and learning at university, with p-values below 0.05. The results also indicate that assessment has the largest effect on at-risk students' perceptions of teaching and learning at university, as shown by the standardised regression weights, which represent the size of the effect of the exogenous variable on the endogenous variable and allow for comparative judgements between the various variables.

Table 1: Regression Weights (Theorised Model)

			Estimate (Standardized)	S.E.	C.R.	P
StudentPer	<---	DPD	,148	,046	3,112	,002
StudentPer	<---	LS	,178	,093	1,651	,099
StudentPer	<---	Assessment	,409	,191	2,881	,004
StudentPer	<---	TL	,113	,115	,905	,366
StudentPer	<---	OS	,164	,111	1,503	,133

The analysis further presents the theorised model's fit indices (Table 2), which showed a chi-square test result of 3.165 and a p-value of 0.012. These initial results, based on structural equation modelling (SEM) techniques and a significance level of 0.05 (Hu & Bentler, 1999), indicated a poor fit of the data to the theorised model. Even after modification indices suggested adding covariances between the error terms e1 and e4, e2 and e4, e9 and e10, e9 and e12, and e13 and e15, which significantly improved model fit, the poor fit persisted.

Table 2: Model Fit Measures (Theorised Model)

Measure	Estimate	Recommended Threshold	Interpretation
CMIN	417,785	--	--
DF	132	--	--
CMIN/DF	3,165	Between 1 and 3	Acceptable
CFI	0,924	>0.95	Acceptable
SRMR	0,046	<0.08	Excellent
RMSEA	0,059	<0.06	Excellent
PClose	0,012	>0.05	poor

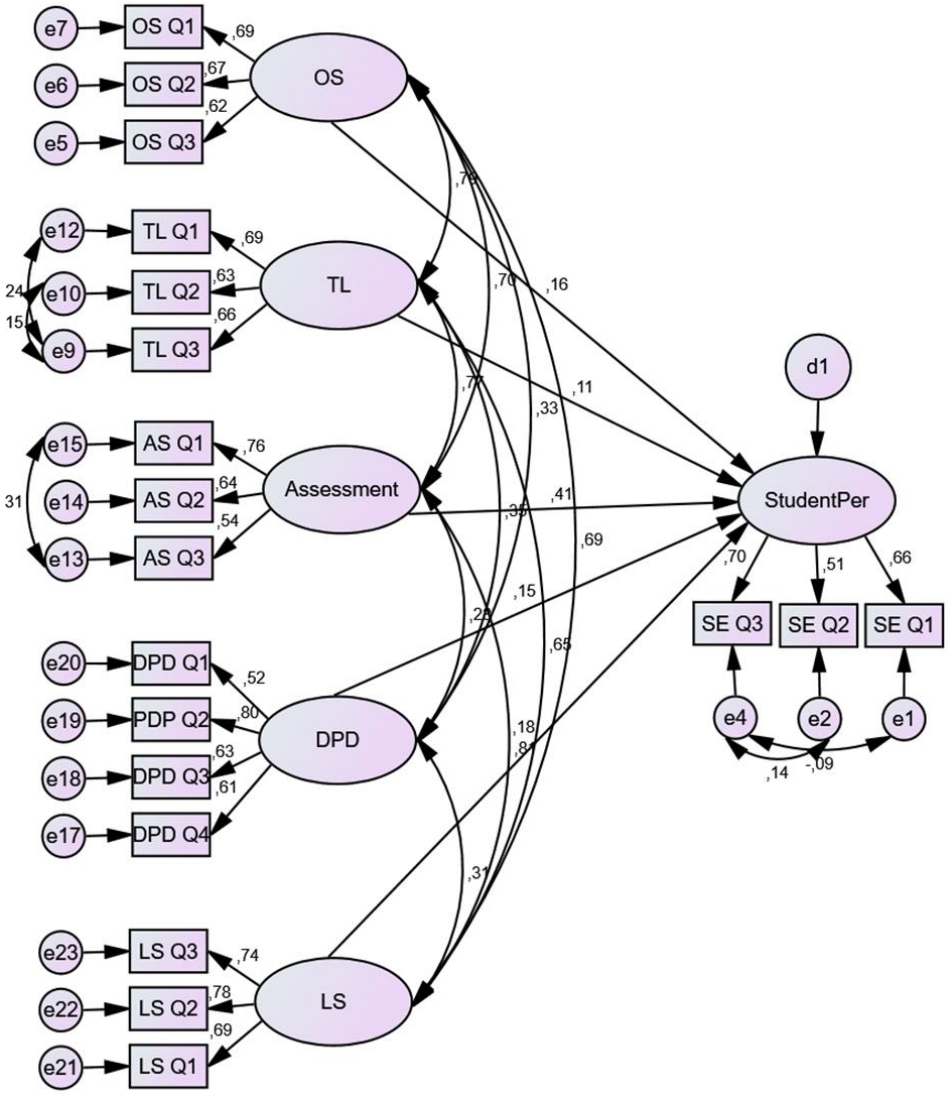

Figure 2: Path Diagram showing standardised estimates (Theorised Model)

Based on the structural equation modelling (SEM) results for the proposed theorised model, to achieve a better model fit, the theorised model was revised. The revised model (**Error! Reference source not found.**) consisted of two exogenous variables: Assessment and Degree Programme Demand.

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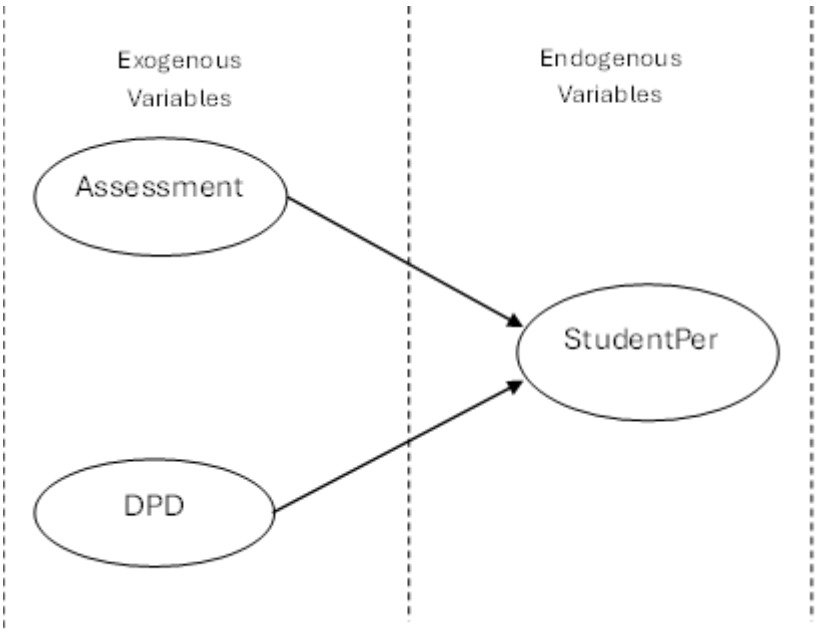

Figure 3: Revised Model

Table 3: Regression Weights (Revised Model)

			Estimate (Standardized)	**S.E.**	**C.R.**	**P**
StudentPer	<---	Assessment	,745	,142	7,663	***
StudentPer	<---	DPD	,189	,049	3,733	***

Table 4: Model Fit Measures (Revised Model)

Measure	**Estimate**	**Recommended Threshold**	**Interpretation**
CMIN	72,352	--	--
DF	29	--	--
CMIN/DF	2,495	Between 1 and 3	Excellent
CFI	0,969	>0.95	Excellent
SRMR	0,044	<0.08	Excellent
RMSEA	0,049	<0.06	Excellent
PClose	0,536	>0.05	Excellent

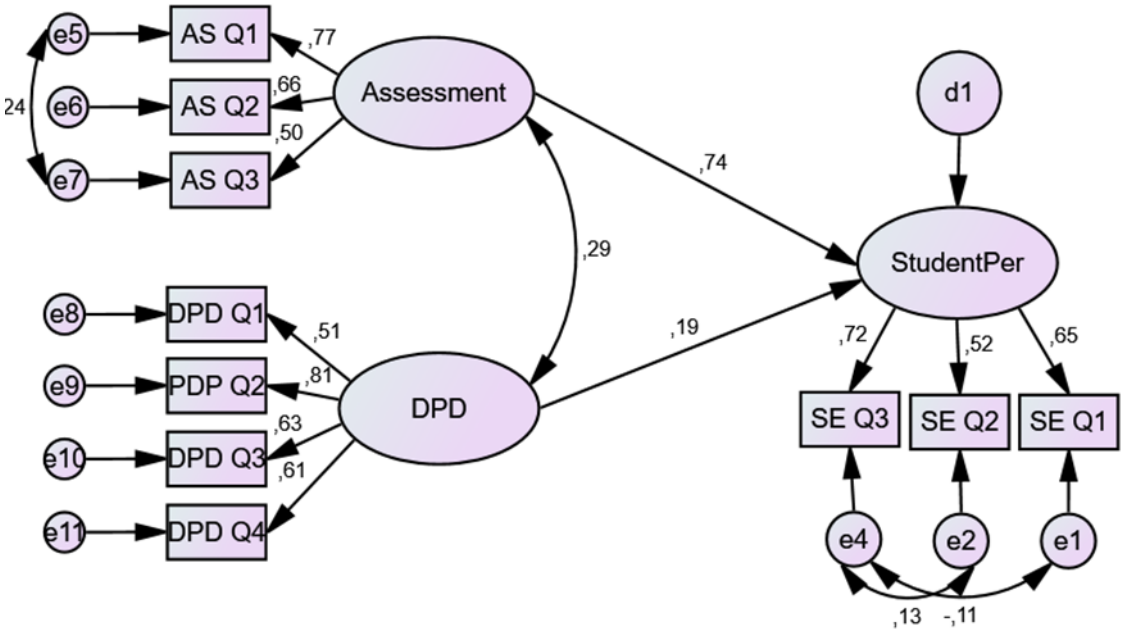

Figure 3: Path Diagram showing standardised estimates (Revised Model)

The resulting path diagram (Figure 3) from the analysis of the revised model showed the revised standardised estimates and loadings of the measured variables for each exogenous variable. The revised model (Table 3) showed that both Assessment and Degree Programme Demand had significant paths in relation to at-risk students' perception of teaching and learning at university, with p-values of less than 0.01. The results also revealed that assessment accounted for the most effect (0.745) on at-risk student perception.

The model fit measures for the revised model reveal that, based on the estimates and the recommended thresholds (Byrne, 2016; Hu & Bentler, 1999) depicted in Table 4 a CFI of 0.969, SRMR of 0.044, RMSEA of 0.049 and a PClose of 0.536 all these fit indices confirmed the suggestion that the revised model was a good fit to the data.

The results reveal the following:

No meaningful relationship exists between at-risk student perceptions and three existing factors: organisation/structure, teaching/learning approaches, and lecturer support. This challenges assumptions in constructive alignment theory regarding at-risk students. Assessment ($\beta = 0.745$) and degree programme demand ($\beta = 0.189$) are the only environmental factors that directly affect perceptions according to the proposed simplified theoretical framework (Fig. 3). This approach emphasises practical solutions over broad environmental aspects. Although these three constructs do not show a significant contribution to at-risk student perception, dismissing lecturer support, organisation, or learning outcomes as irrelevant overlooks important nuances. These factors are mediated by prior disadvantages, such as academic preparedness.

Assessment appears to have a significant influence on the at-risk student experience, accounting for the largest effect on their perceptions of teaching and learning at university. The finding that the exogenous variable Assessment accounts for the largest effect on at-risk perceptions aligns with the findings of Biggs (1996). Assessment, an aspect of instructional design, is one of the two components of Biggs' (1996) cognitive alignment framework. In instructional design, Assessment forms a critical component, and its appropriateness is emphasised by Ramsden and Entwistle (1981). Biggs (1996) explains that instructional alignment, as defined by Cohen (1987), involves planning materials to be taught, what is taught, and what is assessed. These must be properly aligned to maximise student performance in assessments. Biggs (1996) states that assessments determine student learning behaviours. Students will focus on memorization rather than critical thinking when assessments only

require surface-level tasks that involve memorization. The study at hand shows that at-risk students believe assessments are essential to their educational process.

Student confidence suffers when assessments do not align with learning objectives, as this creates problems in the teaching environment. Cohen (1987) supports this: aligned assessments improve learning outcomes by a factor of four compared to misaligned ones. Therefore, assessments should always seek to meet the set objectives (Lublin, 2003). Smith (1991) argues that the avoidance of criticism and increased intervention from higher authorities in the case of poor results is why teachers opt to use test preparation sessions with students. However, some scholars, such as Mehrens & Kaminski (1989), argue that item-focused assessment preparation does not achieve the desired results.

Caution is also necessary regarding the alignment between curriculum objectives and assessments. If the assessment tests lower cognitive skills than those set out in the curriculum objectives, the teaching system becomes driven by the assessment rather than achieving a proper balance (Biggs, 1996; Entwistle & Entwistle, 1992). Reigeluth (2013) posits that, based on assessment theory, assessment ought to be integrated with instruction. Based on this finding, curriculum developers should consider the appropriateness and type of assessment to meet the specific objectives of the programme.

Degree programme demand is the second exogenous variable that significantly influences at-risk students' perceptions of their teaching and learning at university. Higher education functions as an integrated system, according to Von Bertalanffy (1968) and Trow (1973), because inputs (e.g., student readiness), processes (e.g., teaching), and demands interact. The transition of South African higher education from an "elite" to a "mass" system during the post-apartheid period (Trow, 1973) led to increased student diversity and greater teaching responsibilities.

First-generation at-risk students face challenges with technical skills and struggle to manage their workload and navigate complex programmes. Research by Reay et al. (2001) shows that students from disadvantaged backgrounds receive insufficient guidance about programme selection, resulting in incompatible expectations. The DPD findings demonstrate that this problem exists at a systemic level. The high DPD level exceeds the ability of at-risk students to engage with their studies, according to Entwistle and Ramsden (1983).

Many students indicated that they had difficulty in modules due to the skills or technical procedures required (Entwistle & Ramsden, 1983) and the large workload to cover. Given the country's historical background, it is worth noting that most university entrants are the first in their families to attend university. These students are disadvantaged in making degree programme choices (Reay, Davies, et al., 2001) and are more likely to make unsuitable choices. It is therefore essential to assist students in making appropriate degree programme choices through interventions such as career guidance and other student support services, including evaluations, which help students discover their interests in higher education institutions. Without such interventions, these choices can be overwhelming for students. Furthermore, interventions such as learning support programmes, for example, academic writing and supplemental instruction, can help students acquire the necessary knowledge and manage the workload of various degree programmes.

These findings on Assessment and Degree Programme Demand can be explained through the lens of self-determination theory (Deci & Ryan, 2012), which positions these constructs as autonomy-thwarting forces. The validation of the ETLQ across cultures confirms its universality while revealing unique factors that impact at-risk students (e.g., excessive workload and other environmental and institutional challenges). These results have policy relevance as they directly link findings to South Africa's "fees must fall" reforms and attrition crises (Bengesai & Paideya, 2018; Bokana, 2010; Moodley & Singh, 2015; Mutekwe, 2017). The revised model can serve as a tool for inclusive education reform in South Africa, positively impacting student access and success at university. This model can also contribute to theories of structural inequality, such as

institutional habitus (Reay, David, et al., 2001), as "alignment" assumes student homogeneity. The study's findings support the case for a more culturally responsive alignment model.

Limitations and Proposed Future Research

Despite the findings of the current study being useful and encouraging, some limitations should be noted. Firstly, due to the exploratory nature of the study, its applicability in general terms was not tested.

Secondly, self-selection bias may have influenced the study's findings. The sample used in the study consisted of only at-risk students with active university registrations. It did not take into account students whose at-risk status resulted in them not completing their degrees and were excluded due to poor academic performance. These excluded potential participants may contribute to differing perceptions regarding at-risk students' views on teaching and learning at university. Due to this, the question of whether to generalise these current findings to the excluded group of students will require further research to answer.

Thirdly, the study investigates a limited number of specific variables and does not include variables such as approaches to learning, approaches to studying, and reasons for choosing the degree programme. Future research is recommended, which could examine these factors and their weighted effects on at-risk students' perceptions of teaching and learning at university.

Lastly, the cross-sectional nature of the data used in the analysis provided only a snapshot view of the influence of the identified factors on the perceptions of at-risk students regarding teaching and learning at university. It is recommended that a more suitable empirical study, which would provide a richer set of findings, involve longitudinal data, accounting for effects at the beginning of the study, and comparing effects after an extended period of time. Additionally, moderation analysis can be employed in future research to investigate whether support matters only for specific subgroups.

Conclusion

With the current increased access to institutions of higher education globally, and the challenges this brings, such as large classes and high attrition rates, higher education institutions are now focusing on enhancing their teaching and learning environments. This, combined with the demands of 21st-century jobs as we enter the Fourth Industrial Revolution, requires students to engage in deep learning. Developing nations like South Africa, which are in dire need of skilled labour, cannot afford to lose potential skilled workers through attrition from universities. For this reason, this study explores the factors that influence at-risk students' perceptions of their teaching and learning environment. It is hoped that such findings will contribute to research-based guidance on factors to consider when seeking to improve at-risk students' perceptions of teaching and learning at university, thereby improving throughput and retention.

This study presents a framework for understanding at-risk students' perceptions of their teaching and learning environments at the university level. The findings are consistent with existing literature (Biggs, 1996; Trow, 1973), which identifies assessment as essential and an ongoing challenge. Assessments in the programme also need to be aligned with what is taught in class and with curriculum objectives to achieve the desired results. This study identifies degree programme demand as the second most significant variable in understanding improved perceptions of teaching and learning among at-risk students at university. The study also finds that organisation and structure, teaching and learning approaches, and lecturer support do not have a significant influence on at-risk students' perceptions of teaching and learning at university. Based on the new theoretical proposition, for at-risk students, environmental perceptions are driven by survival-linked factors (assessment and demand), rather than developmental factors (support and pedagogy). Several recommendations can be made. There is a need for further studies to understand the perceptions of at-risk students regarding their teaching and learning environments at university. These studies could include more variables, such as approaches to

teaching and learning. The findings of this study could inform policy when developing interventions to enhance teaching and learning in universities.

Disclosure

Conflict of interest

The authors declare no conflict of interest

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