

Outcomes-Based Education in South Africa: Using an Instrument to Assess School-Level Environments during the Implementation

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ABSTRACT

In this study, we developed and validated a questionnaire to assess teachers' perceptions of their actual and preferred school-level environment, investigated whether teachers involved with outcomes-based education perceive the school-level environment differently from those who are not, and investigated factors in the school-level environment (such as resources and staff freedom) linked with a school's likelihood of successfully implementing outcomes-based education. The study involved modifying and validating an existing questionnaire to make it suitable for assessing the school-level environment in South Africa, as well as adding to the School-Level Environment Survey (SLEQ) the scales of Familiarity with OBE and Parental Involvement. Analysis of data collected from 403 teachers provides evidence for the validity and reliability of the new SLEQ-SA. MANOVA for repeated measures revealed a statistically significant ($p < 0.01$) difference between teacher perceptions of their actual school environment and the one that they would prefer for all seven SLEQ-SA dimensions. When MANOVA was used to examine whether teachers involved in OBE perceive their school-level environments differently from those who are not, statistically significant differences emerged for two of the seven school-level environment scales, with teachers involved with OBE perceiving significantly more Familiarity with OBE and Work Pressure. The constraints faced by teachers are wide ranging and include a number of factors such as a lack of material resources and large class sizes. The results provide valuable information to policy-makers, principals and researchers that potentially could help to guide the implementation of outcomes-based education.

INTRODUCTION

For many years, South Africa went through a system of apartheid, which was designed to undermine the majority of the people in the country. Along with the introduction of a democratic political dispensation in 1994, South Africa has overhauled the existing education system by gradually phasing in an Outcomes-Based Education (OBE) approach. This bold step was taken to be in line with international trends – moving away from the content-driven curriculum emphasising examination results towards an emphasis on facilitating lifelong learning (Department of Education, 1997). Other countries in which OBE is being implemented include Australia (Andrich, 2002; Brindley, 2001) and New Zealand (Bell, Jones & Carr, 1995; Ministry of Education, 1993).

In 1995, South Africa set itself a period during which an outcomes-based curriculum would be phased in. According to this initial time frame, OBE would have been phased in by 2004. This new curriculum was called *Curriculum 2005* (C2005), and a staggered implementation of C2005 began in 1998. To date, the initial curriculum reforms have been implemented in all primary grades, with the first implementation in the secondary phase having taken place in Grade 8 in 2001. A revised version of C2005 (see, for example, Department of Education [2002]) – established as a result of its review by Chisholm et al. (2000) – will have been implemented across all junior secondary grades by 2008, along with the new curriculum (Department of Education, 2003a) for the senior secondary grades. Past research indicates that difficulties in implementing the new curriculum could be the result of under-resourced schools and inadequately-trained teachers (Chisholm et al., 2000).

This study was conducted in the Limpopo Province (formerly known as the Northern Transvaal and later the Northern Province), one of nine provinces established after the 1994 democratic elections in South Africa (Krige, Dove, Makalima & Scott, 1994). These provinces vary in their populations' demographic profile. Excluding Gauteng, which is centred around Johannesburg, the three most populous provinces (i.e., KwaZulu-Natal, the Eastern Cape, and the Limpopo Province) have 71% of South Africa's rural population (Statistics South Africa, 2003a [Table 3.1-1]). These three provinces together contain approximately 77% of the country's rural school population (using the weighted data of the *1999 October Household Survey* [Statistics South Africa, 2000]) and 54% of South Africa's total Grade 8 to 12 school population (Department of Education, 2003b). Given the three provinces' ruralness and similarity in other aspects (e.g. the high percentage of households using wood for cooking and having no toilet facilities, and the low proportion of households with access to piped water [Statistics South Africa, 2003b]), it is not unreasonable to assume that the vast majority of secondary schools in these provinces are similar in character. In the Limpopo Province, there is an acute shortage of classrooms and schools are generally under-resourced. The majority of schools have no electricity and few schools have running water. Teachers are often poorly qualified and, as a result, many struggle with subject matter content.

The present research was initiated to establish the extent to which school-level factors (such as resources and staff freedom) impact on the implementation of the new curriculum in South Africa. This article reports the initial phase of the study, during which a questionnaire was designed to assess school-level factors likely to influence the implementation of OBE, and describes its modification and validation for the South African context.

OBJECTIVES

1. To develop and validate a questionnaire to assess teachers' perceptions of the school-level environment in South Africa.
2. To examine teachers' perceptions of the actual and preferred school-level environment in high schools in South Africa.
3. To investigate whether teachers involved in OBE perceive the school-level environment differently from teachers not involved in OBE.

BACKGROUND AND THEORETICAL FRAMEWORK

The environment or climate is widely acknowledged as a vital aspect of the life of an organisation or school (Fraser, 1998). The school climate or school-level environment, according to Freiberg (1999), is the quality of the working environment that reflects the way in which people interact and react, and a measure of school characteristics that teachers, administrators, parents and policy makers consider to be important. From a perceptual measurement perspective, Hoy (1990, p. 152) states: "School climate is the relatively enduring quality of the school environment that is experienced by participants, affects their behaviour, and is based on their collective perceptions of behaviour in schools." The idea that schools have a distinct and measurable climate was first recognised by Halpin and Croft in 1963. At this time, student achievement often was explained by the socioeconomic composition of the school. In 1967, McDill, Meyers and Rigsby independently pursued a line of research that set out to identify the social and educational climate of secondary schools and whether this influenced student achievement and ambitions.

Studies involving school-level environment are often associated with the organisational climate of the school. However, in the field of learning environments, the measurement of the school-level environment has been viewed from a psychosocial perspective in which various aspects of the organisation are quantified through the use of survey instruments. As early as 1936, Kurt Lewin (1936) recognised that the environment is a determinant of human behaviour. Following Lewin's work, Murray (1938) proposed a Needs-Press Model in which situational variables found in the environment account for a degree of behavioural variance.

Following the work of Lewin and Murray, two research programs focused on developing instruments that could be used to assess the classroom learning environment. Herbert Walberg's Learning Environment Inventory (Anderson & Walberg, 1968) and Rudolf Moos's Classroom Environment Scale (Moos & Trickett, 1974) were the first instruments developed to assess students' perceptions of their learning environment. Since this time, the influence of the learning environment on the education process has received a great deal of attention, and there has been much progress in the conceptualisation and assessment of learning environments (Fraser, 1994, 1998; Goh & Khine, 2002). Whilst different approaches, qualitative and quantitative, have been used in conducting research in the field of learning environments, the use of questionnaires to assess students' perceptions has been the predominant method.

In 1979, Stewart made the distinction between school-level and classroom-level environment research. Classroom-level research tends to focus on relationships between the students and their teacher, whereas school-level research is more concerned with relationships between teachers and other teachers as well as administrators and heads of department. Rentoul and Fraser (1983) further distinguished between classroom-level and school-level research by examining the theoretical underpinnings of each. Whereas classroom-level research has been largely associated with classroom environment research and the research of Walberg (1979), Moos (1979) and Fraser (1998), school-level

environment research has been associated with the field of educational administration (Anderson, 1982; Fisher, Docker & Fraser, 1986; Thomas, 1976). Moos (1974) acknowledged this distinction with the development of two instruments, namely, the Classroom Environment Scale (CES) to assess students' perceptions of characteristics of their classroom and the Work Environment Scale (WES) to assess teachers' perceptions of aspects of their school work environment.

The Work Environment Scale (WES) was used in Australia by Docker, Fraser and Fisher (1989) to compare the school-level environment perceptions of 599 high school and primary school teachers. Although there was little difference between the environment that teachers would prefer, teachers in primary schools generally perceived more favourable environments than their high school counterparts in terms of Staff Support, Autonomy, Task Orientation, Clarity, Innovation, Physical Comfort and Work Pressure (Docker et al., 1989). Research conducted by Brookover et al. (1978) and Vyskocil and Goens (1979) has shown that the school-level environment influences student cognitive outcomes, as well as student values, personal growth and satisfaction.

Past instruments used to assess the school-level environment include the College Characteristics Index (CCI) (Stern, 1970), School Survey (Coughlan, 1966, 1969), Learning Climate Inventory (Hoyle, 1976) and the Organizational Climate Description Questionnaire (OCDQ) (Halpin & Croft, 1963). Freiberg's (1999) book, *School Climate*, identifies numerous instruments and a range of alternative measures that can be used to assess the school-level environment. To address weaknesses in questionnaires that existed at the time, Rentoul and Fraser developed the School-Level Environment Questionnaire (SLEQ) (Rentoul & Fraser, 1983) to satisfy six important criteria listed below.

To ensure that the instrument's dimensions were consistent with theoretical dimensions, the first two criteria were addressed. First, the selection of scales to be included in the SLEQ was based on those characteristics in the school-level environment considered to be important in the literature and in other school environment instruments. Second, the scales selected for inclusion in the SLEQ provided coverage of the three general categories distinguished by Moos (1974) for conceptualising all human environments (Relationship Dimensions, Personal Development Dimensions and System Maintenance and System Change Dimensions). Because previous instruments had been developed without checking their relevance to teachers, the third criterion, salience to teachers, was addressed through interviews with practising teachers. Some past instruments were adapted from other non-school environments (such as the Work Environment Scale) and included some items that were not suited to the school environment. It was important, therefore, to ensure that the fourth criterion ensured that only material relevant to schools was included. As numerous, reliable measures of the classroom environment already existed, it was considered important to ensure that there was minimal overlap between the school environment instrument and existing classroom environment instruments. Finally, the SLEQ was designed with economy in mind. The sixth criterion ensured that the instrument included a relatively small number of reliable scales each with a fairly small number of items.

The SLEQ was designed to assess school teachers' perceptions of psychosocial dimensions of the environment of the school and includes eight scales with seven items in each: Affiliation, Student Supportiveness, Professional Interest, Achievement Orientation, Staff Freedom (originally named Formalisation), Participatory Decision Making (originally named Centralisation), Innovativeness and Resource Adequacy. In later versions of the SLEQ, the Achievement Orientation scale was dropped and an additional scale, Work Pressure, was included (Fisher & Fraser, 1991a).

A number of studies have investigated the validity and reliability of the SLEQ. Up until recently, most studies have reported the reliability and validity of the SLEQ in terms of internal consistency reliability and discriminant validity (Cresswell & Fisher, 1999; Docker et al., 1989; Dorman, Fraser & McRobbie, 1997a, 1997b; Fisher & Fraser, 1991a; Rentoul

& Fraser, 1983). A more recent study by Johnson and Stevens (2001) used exploratory and confirmatory factor analysis. With a sample of 1106 teachers in 59 primary schools in the USA, Johnson and Stevens used one half of their sample to conduct exploratory factor analysis, whereas confirmatory factor analysis using structural equation modelling was run with the other half of the sample. These analyses led to a refined version of the SLEQ that was administered to a larger sample. The results indicated that a refined version SLEQ was a reliable and valid instrument to measure perceptions of school environment.

The SLEQ has been used for a range of purposes, including: school improvement (Fisher & Fraser, 1991b); differences between government and Catholic schools (Dorman & Fraser, 1996); examining patterns of transition from primary to middle school (Chung, Elias & Schneider, 1998); investigating teachers' perceptions of their work environment (Fisher & Grady, 1998); investigating perception differences between student teachers and experienced teachers (Huang & Waxman, 1995; Kiley & Jensen, 1998); examining gender differences in teachers' perceptions (Huang, 2001); as an indicator of teacher morale (Young, 1998); comparing special education and mainstream settings (Adams & Adams, 2000); evaluating alternative high schools (Fraser, Williamson & Tobin, 1987); and investigating associations between outcomes and school-level environment (Webster & Fisher, 2003).

Five past studies have brought together research on school-level environment (teachers' perceptions of the school environment) with classroom-level environment (students' perceptions of the classroom environment) to examine whether links exist between the two (Dorman et al., 1997a; Fisher, Fraser & Wubbels, 1993; Fraser & Rentoul, 1982; Idiris & Fraser, 1997). In each case, research appears to indicate that the school environment does not strongly influence the classroom environment. It would appear that, whilst school organisation and management is important, often what happens at the school-level does not manifest at the classroom-level. For this reason, Dorman and colleagues speak of individual classrooms being somewhat 'insulated' from the school as a whole.

Burden and Fraser (1994) used actual and preferred forms of the SLEQ with educational psychologists in a school improvement study. The study was undertaken in a large primary school with 15 teachers in the United Kingdom. These researchers reported sizable positive improvements in two areas of the SLEQ (Resource Adequacy and Innovation).

Templeton and Jensen (1993) combined data collected using the SLEQ with a range of qualitative data to investigate how exemplary teachers view the school-level environment. The results indicated that exemplary teachers prefer more freedom, in terms of implementing the curriculum, and less work pressure. Templeton and Johnson (1998), Johnson and Templeton (1999) and Kiley and Jensen (2000) also have combined teachers' responses to the SLEQ with qualitative data. Close scrutiny of the SLEQ led us to believe that it could be modified for use in South Africa.

Schools can be viewed as organisations, operating similarly to other social groups in that they have their own goals, rules and regulations, roles, hierarchies of authority, forms of compliance, and communication patterns (Dorman, 1998; Dorman et al., 1997b). These aspects, which constitute the school environment and which are associated with a range of contributory factors, are considered pivotal to the successful implementation of new curricula. It was with this in mind that the research reported in this article was undertaken to examine the influence of teachers' perceptions of the school-level environment on the implementation of OBE.

RESEARCH METHODS

Sample

Questionnaire data were collected from 403 teachers in 54 secondary schools in the Limpopo Province, with 46 schools being from rural areas, five schools from township (i.e.

semi-rural) areas, and three schools from urban areas. These schools were selected to represent a broad range of schools located in the Limpopo Province and other similarly rural parts of South Africa.

Developing an Instrument for Use in South Africa

The development and validation of the questionnaire involved (1) conducting a review of literature internationally to identify dimensions that are central to the educational philosophy of OBE, (2) conducting interviews with school management teams and teachers to ensure that the dimensions are salient, (3) ensuring consistency with Moos's (1974) three general psychosocial dimensions of Relationship, Personal Development and System Maintenance/System Change, (4) developing two new scales, pertinent to the South African situation, as well as adapting and adopting scales and items from the widely-used School Level Environment Questionnaire (SLEQ) (Fisher & Fraser, 1991a, 1991b), (5) field testing the instrument with teachers and interviewing them about their responses, and (6) refinement of scales and items.

Before examining teachers' perceptions of factors within the school-level environment that are likely to impact on the extent to which a school implements the philosophy of outcomes-based education, we modified the SLEQ to make it suitable for use in South Africa. The SLEQ was considered to be an ideal questionnaire because its dimensions closely match central concepts identified in the literature on OBE.

All eight scales from the original SLEQ (developed by Fisher & Fraser, 1990) were selected for use, namely, Staff Freedom, Participatory Decision Making, Resource Adequacy, Work Pressure, Student Support, Professional Interest, Affiliation and Innovation. Two additional scales were developed for use in the present research, namely, Parental Involvement and OBE Familiarity, as they were considered to be relevant to the successful implementation of curriculum innovation by school management teams and teachers. Table I provides, for each scale, a scale description, a sample item and the classification according to Moos's scheme.

Teachers were requested to respond to items of the SLEQ-SA on a five-point scale with the alternatives of Almost Never, Seldom, Sometimes, Often and Almost Always. Historically, researchers have administered a separate actual and preferred version of questionnaires. To provide a more economical format, however, the SLEQ-SA included the use of two adjacent response scales on the one sheet (see Aldridge, Fraser, Fisher & Wood, 2002), one to record what teachers perceived as actually happening in their school and the other to record what teachers would prefer to happen in their school. A copy of the SLEQ-SA used in the present study is provided in the Appendix.

TABLE I

Description of Scales in the SLEQ-SA and their Classification According to Moos's Scheme

Scale name	Description of scale	Sample item	Moos's general category
	<i>The extent to which ...</i>		
Parental involvement	... parents are involved in their children's education at both an individual and school level.	Parents discuss learners' performance with teachers. (+)	Relationship
Student support	... there is a good rapport between teachers and students and students behave in a responsible self-disciplined manner.	There are many disruptive, difficult students in the school. (-)	Relationship
Affiliation	... teachers can obtain assistance, advice and encouragement and are made to feel accepted by colleagues.	I feel that I could rely on my colleagues for assistance if I should need it. (+)	Relationship
Professional interest	... teachers discuss professional matters, show interest in their work and seek further professional development.	Teachers frequently discuss teaching methods and strategies with each other. (+)	Personal development
OBE familiarity	... teachers have been trained to use teaching and assessment strategies associated with OBE.	I feel confident about developing OBE learning activities. (+)	Personal development
Staff freedom	... teachers are free to set rules, guidelines and procedures, and of supervision to ensure rule compliance.	I am often supervised to ensure that I follow directions correctly. (-)	System maintenance and system change
Innovation	... the school is in favour of planned change and experimentation, and fosters individualisation.	Teachers are encouraged to be innovative in this school. (+)	System maintenance and system change
Resource adequacy	... support personnel, facilities, finance, equipment and resources are suitable and adequate.	The supply of equipment and resources is inadequate. (-)	System maintenance and system change
Work pressure	... work pressure dominates the school environment.	Teachers have to work long hours to keep up with the workload. (+)	System maintenance and system change

Items designated (+) are scored 1, 2, 3, 4 and 5, respectively, for the responses Never, Seldom, Sometimes, Often and Always. Items designated (-) are scored in reverse.

RESULTS

Validating the SLEQ-SA

Data collected from the 403 teachers in 54 schools were analysed to provide evidence for the validity and reliability of the SLEQ-SA. When principal components factor analysis was conducted, a revised version of the SLEQ-SA comprising 51 items in seven scales (OBE Familiarity, Resource Adequacy, Work Pressure, Student Support, Parental Involvement, Professional Interest and Affiliation and Innovation) (Table II) was accepted. The conventionally-used minimum value of 0.30 for a factor loading to be meaningful was adopted. Two scales, Staff Freedom and Participatory Decision Making, were lost. For all other scales, the items loaded on their own scale and no other scale (with the exception of the Professional Interest and Affiliation scales that came together to form one new scale, that was renamed Collegiality). Interviews with teachers indicated that they confused the two issues and responded to items in similar ways that would suggest that teachers were referring to the degree of collegiality amongst the staff.

TABLE II

Factor Loadings for a Modified Version of Actual Form of SLEQ-SA in South Africa

Item no.	Factor loading						
	Parental involvement	Student support	Collegiality	Familiarity with OBE	Innovation	Resource adequacy	Work pressure
33	0.71						
34	0.76						
35	0.60						
36	0.64						
37	0.62						
38	0.72						
25		0.60					
26		0.65					
27		0.67					
28		0.52					
29		0.68					
32		0.37					
41			0.71				
42			0.67				
43			0.65				
44			0.74				
45			0.73				
46			0.69				
47			0.84				
48			0.71				
49			0.66				
50			0.31				
51			0.51				
53			0.58				
54			0.70				
55			0.74				
1				0.65			
3				0.79			
4				0.84			
5				0.73			
7				0.63			
8				0.54			
74					0.51		
76					0.38		
77					0.68		
78					0.63		
79					0.56		
80				0.35	0.45		
11						0.46	
12						0.65	
13						0.73	
14						0.74	
15						0.45	
16						0.53	
17							0.67
18							0.70
19							0.59
20							0.50
22							0.36
23							0.52
24							0.56
%	4.80	4.90	4.70	13.60	4.50	7.00	6.30
Variance							

Factor loadings smaller than 0.30 have been omitted.
The sample consisted of 403 teachers in 54 schools in South Africa.

Table II shows the factor loadings for the SLEQ-SA for the sample of 403 teachers using the individual teacher as the unit of analysis, along with the percentage of variance for each scale. The percentage of variance varies from 4.5 to 13.6 for different scales, with

the total variance accounted for being 45.8%. Of the 357 possible loadings in Table II (51 items x 7 scales = 357), there is only one item for which the seven-factor modified structure is not replicated. Item 80 has a loading of more than 0.30 with the OBE Familiarity scale as well as with its own scale (namely, Innovation). For six of the seven environment scales, namely, OBE Familiarity, Resource Adequacy, Work Pressure, Student Support, Parental Involvement and Collegiality, the seven-factor structure is supported perfectly for the 51-item solution.

Due to difficulties experienced in past studies in collecting an adequate sample size to perform a factor analysis, this study is one of the first to provide a satisfactory factor structure for a school-level environment questionnaire (see also Johnson & Stevens, 2001).

To provide further support to the reliability and validity of the SLEQ-SA, the internal consistency reliability and discriminant validity was calculated for both the actual and preferred forms of the questionnaire, and the ability to differentiate between schools was calculated for the actual form (reported in Table III). The internal consistency (Cronbach alpha reliability coefficient) for each scale of the actual form of the SLEQ-SA ranged from 0.69 to 0.92 when using the individual as the unit of analysis and from 0.76 to 0.94 when using the school mean as the unit of analysis. For the preferred form, the internal consistency reliability ranged from 0.57 to 0.93 for individual as the unit of analysis and from 0.71 to 0.94 for the school mean as the unit of analysis. For each scale, for both the actual and preferred forms, the internal consistency reliability of the SLEQ-SA can be considered acceptable.

TABLE III

Internal Consistency Reliability (Cronbach Alpha Coefficient), Discriminant Validity (Mean Correlation With Other Scales) and Ability to Differentiate Between Classrooms (ANOVA Results) for Two Units of Analysis for the Modified Version of SLEQ-SA

Scale	Unit of analysis	No. of items	Alpha reliability		Mean correlation with other scales		ANOVA η^2
			Actual	Preferred	Actual	Preferred	Actual
Parental involvement	Individual	6	0.86	0.91	0.21	0.46	0.36**
	School mean		0.92	0.91	0.40	0.45	
Student support	Individual	6	0.75	0.57	0.19	0.36	0.34**
	School mean		0.88	0.71	0.33	0.32	
Collegiality	Individual	14	0.92	0.86	0.18	0.38	0.25**
	School mean		0.94	0.88	0.33	0.44	
Familiarity with OBE	Individual	8	0.77	0.81	0.18	0.38	0.30**
	School mean		0.83	0.76	0.30	0.39	
Innovation	Individual	6	0.77	0.82	0.22	0.37	0.18
	School mean		0.76	0.85	0.34	0.43	
Resource adequacy	Individual	6	0.77	0.93	0.12	0.47	0.47**
	School mean		0.85	0.94	0.16	0.47	
Work pressure	Individual	7	0.69	0.80	0.04	0.21	0.21**
	School mean		0.79	0.77	0.31	0.13	

The sample consisted of 403 teachers from 54 schools in South Africa.

The η^2 statistic (which is the ratio of 'between' to 'total' sums of squares) represents the proportion of variance explained by class membership.

** $p < 0.01$.

As a convenient index, the mean correlation of a scale with other scales was calculated to provide an indication of the degree to which the scales are unique in what they assess. The discriminant validity (mean correlation of a scale with other scales) for scales in the actual version of the SLEQ-SA range from 0.04 and 0.22 with the individual teacher as the unit of analysis and between 0.16 and 0.40 with the school mean as the unit of analysis.

For the preferred version of the SLEQ-SA, the mean correlation of a scale with other scales range from 0.21 and 0.47 for the individual as the unit of analysis and between 0.13 and 0.47 for the school mean as the unit of analysis. These results, reported in Table III, suggest a degree of overlap between the dimensions that each scale assesses, especially for the preferred version. However, the factor analysis results attest to the independence of factor scores on the SLEQ-SA.

To ascertain whether the actual version of each SLEQ-SA scale is able to differentiate between the perceptions of teachers in different schools, an analysis of variance (ANOVA) was calculated for each scale. The results are reported in Table III. The ANOVA results indicate that, with the exception of Innovation, each SLEQ-SA scale was able to differentiate significantly ($p < 0.01$) between the perceptions of teachers in different South African high schools. Overall, the results of the analysis suggest satisfactory reliability and validity for this version of the SLEQ-SA.

To examine the usefulness of the SLEQ-SA in describing the school-level environment, the questionnaire was used to examine, first, whether teachers' perceptions of the school-level environment differ from that which they would prefer and, second, whether teachers involved in implementing the new, outcomes-based curriculum perceive factors within the school-level environment differently from teachers who are not involved.

Differences between Teachers' Perceptions of Actual and Preferred School-Level Environment

To examine whether the SLEQ-SA could be used to describe the school-level environment of schools in the Limpopo Province in terms of teachers' perceptions of their actual and preferred environment, descriptive analyses were used. MANOVA for repeated measures revealed a statistically significant ($p < 0.01$) difference between teacher perceptions of their actual school environment and the one that they would prefer for all seven SLEQ-SA dimensions. Because the multivariate test (Wilks' lambda) revealed significant actual-preferred differences overall, the ANOVA for repeated measures was interpreted for each individual SLEQ-SA scale (see Table IV). The results indicate that, for all scales, teachers would prefer a more favourable level of each SLEQ-SA dimension than is currently perceived to be present (i.e. less Work Pressure and more of all other dimensions). These results replicate Templeton and Jensen's (1993) study, which found that exemplary teachers perceive their school environments as having less work pressure, more freedom and greater professional interaction. Fraser (1999), in his article 'Using Learning Environment Perceptions to Improve Classroom and School Climates', reports that teachers identified Resource Adequacy and Work Pressure as key areas that need improvement.

TABLE IV

Average Item Mean, Average Item Standard Deviation and Difference (Effect Size and MANOVA for Repeated Measures) between Actual and Preferred Perceptions on the SLEQ-SA Using the School Mean as the Unit of Analysis

Scale	Average item mean ^a		Average item standard deviation		Difference	
	Actual	Preferred	Actual	Preferred	Effect size	F
Parental involvement	2.36	4.58	0.54	0.35	4.99	4.99**
Student support	3.37	4.23	0.43	0.38	2.12	3.52**
Collegiality	3.77	4.46	0.40	0.26	2.09	3.62**
Familiarity with OBE	2.72	4.38	0.53	0.30	4.00	5.03**
Innovation	3.10	4.28	0.36	0.34	4.00	4.61**
Resources adequacy	2.11	4.49	0.70	0.38	4.41	4.82**
Work pressure	3.49	2.65	0.39	0.43	2.05	3.40**

The sample consisted of 403 teachers in 54 schools.

^aAs the number of items in each scale differed, the average item mean, or scale score divided by the number of items in that scale, was used to provide a meaningful comparison between scales.

** $p < 0.01$.

To examine the magnitudes of the actual-preferred differences, as well as their statistical significance (as recommended by Thompson, 1998a, 1998b), effect sizes were calculated in terms of the differences between actual and preferred means divided by the pooled standard deviation. The effect sizes range between 2 standard deviations and almost 5 standard deviations (4.99). These results suggest very large differences between teachers' perceptions of the actual school-level environment. Clearly, teachers would prefer a more favourable school environment, particularly in regard to Parental Involvement, Familiarity with OBE, Innovation, and Resource Adequacy (Table IV). Figure 1 provides a graphical profile of teachers' actual and preferred perceptions of their school-level environment in the Limpopo Province.

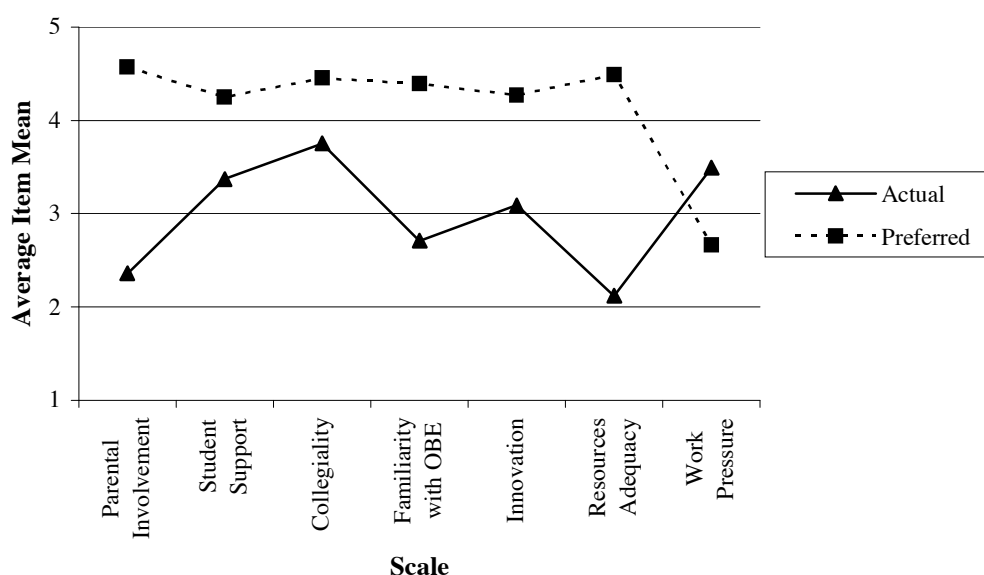


Figure 1. Difference between teachers' perceptions on the actual and preferred versions of the modified SLEQ-SA.

Differences between the Perceptions of Teachers Involved and Not Involved in OBE

As teachers involved in OBE and those who are not involved are not found in equal numbers in every school, the within-school mean was chosen as the unit of analysis to

provide a matched pair of means – one within-school mean for teachers involved in implementing OBE and one within-school mean for those who were not involved in implementing OBE. This reduces confounding in that, for each group of teachers involved in OBE within a particular school, there is a corresponding group of teachers not involved in OBE in the same school.

MANOVA for repeated measures revealed a statistically significant ($p < 0.01$) difference overall between teachers involved and not involved in OBE for the set of seven SLEQ-SA dimensions. Because the multivariate test produced statistically significant results using Wilks' lambda criterion, the univariate ANOVA for repeated measures was interpreted for each individual WIHIC scale to investigate whether teachers involved in OBE and those who were not had different perceptions of their school-level environment.

The results, reported in Table V, reveal statistically significant differences for the actual form for two of the seven school-level environment scales, with teachers involved with OBE perceiving significantly more OBE Familiarity and Work Pressure than teachers not involved in OBE. The results also indicate that there were no significant differences between the types of school-level environment preferred by teachers involved in OBE and teachers who were not. The effect size for the two scales of the SLEQ-SA that had significant differences was approximately one standard deviation (0.98) for actual OBE Familiarity and over two-thirds of a standard deviation (0.79) for actual Work Pressure. These results indicate important differences in perceptions for these two scales.

Figure 2 provides a graphical profile representing teachers' scores for the actual and preferred versions of the SLEQ-SA. Based on the similarity of scores on scales of the SLEQ-SA, it appears that teachers involved in OBE and teachers not involved in this approach to teaching and learning have similar perceptions of their school-level environment, with respect to all preferred and most actual scales. In the latter case, teachers involved in OBE reported significantly greater OBE Familiarity and Work Pressure in comparison to non-OBE teachers.

TABLE V

Average Item Mean, Average Item Standard Deviation and Difference (Effect Size and MANOVA for Repeated Measures) Between OBE and Non-OBE Teachers on the Actual and Preferred Versions of the SLEQ-SA Using the Within-School Mean as the Unit of Analysis

Scale	Form	Average item mean		Average item standard deviation		Difference	
		OBE	Non-OBE	OBE	Non-OBE	Effect size	<i>F</i>
Parental involvement	Actual	2.38	2.50	0.61	0.96	0.15	0.12
	Preferred	4.63	4.43	0.32	0.65	0.41	0.94
Student support	Actual	3.29	3.33	0.60	0.45	0.08	0.04
	Preferred	4.19	4.44	0.37	0.56	0.54	2.52
Collegiality	Actual	3.80	3.66	0.51	0.54	0.27	0.50
	Preferred	4.53	4.49	0.21	0.43	0.13	1.14
Familiarity with OBE	Actual	2.67	2.02	0.41	0.92	0.98	4.86*
	Preferred	4.39	4.17	0.30	0.63	0.47	1.23
Innovation	Actual	3.01	3.25	0.50	0.74	0.39	0.57
	Preferred	4.32	4.24	0.35	0.52	0.18	0.45
Resource adequacy	Actual	2.08	2.27	0.64	0.74	0.28	0.29
	Preferred	4.56	4.37	0.29	0.69	0.39	0.55
Work pressure	Actual	3.67	3.29	0.33	0.63	0.79	5.87**
	Preferred	2.67	2.52	0.38	0.62	0.30	2.56

The sample consisted of 49 matched pairs of within-school means for OBE and non-OBE teachers.

* $p < 0.05$. ** $p < 0.01$.

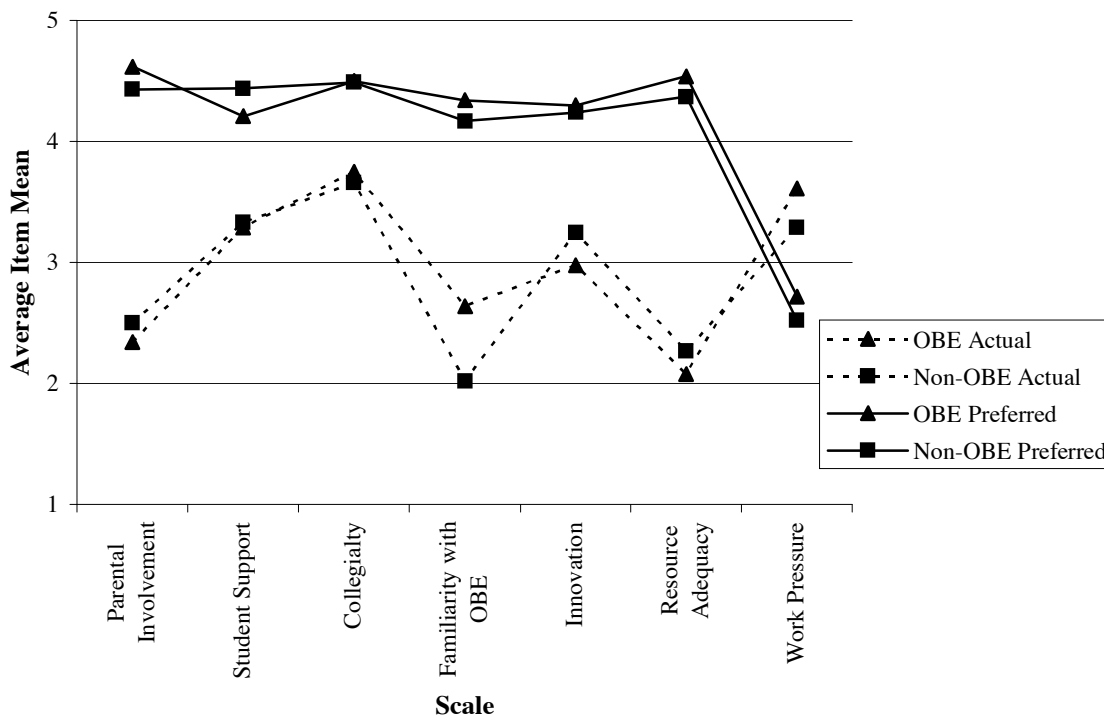


Figure 2. Difference between OBE and non-OBE teachers in actual and preferred scores on the SLEQ-SA.

DISCUSSION AND CONCLUSIONS

The present study was undertaken primarily to examine the school-level environment of schools in the Limpopo Province of South Africa, with a view to developing a questionnaire that could be used to examine the types of school-level environments that are likely to support successful implementation of Outcomes-Based Education. An important contribution was the careful modification of the School-Level Environment Questionnaire (SLEQ) to make it suitable for the South African context. Modifications made to the SLEQ to form the SLEQ-SA included the addition of two important scales relevant to the South African context, namely, OBE Familiarity and Parental Involvement. Analyses of the data collected from 403 teachers in 54 secondary schools resulted in the acceptance of a seven-scale factor structure (OBE Familiarity, Resource Adequacy, Work Pressure, Student Support, Parental Involvement, Collegiality and Innovation). Each of these seven scales exhibited comparatively strong factor structure, internal consistency reliability, and an ability to differentiate between the perceptions of teachers in different schools.

MANOVA for repeated measures revealed a statistically significant ($p < 0.01$) difference between teacher perceptions of their actual school environment and the one that they would prefer. This pattern, in which teachers prefer a more favourable learning environment than the one perceived to be present, replicates past research (Fraser, 1998). The results indicate that teachers would prefer significantly more Parental Involvement, OBE Familiarity, Resource Adequacy, Students Support, Collegiality and Innovation, and less Work Pressure than they are currently receiving. Very large effect sizes for actual-preferred differences ranged from 2 to 5 standard deviations for different scales.

The particularly large disparities in teachers' perceptions on the first three dimensions, however, are not unanticipated. Parental involvement in schools is generally acknowledged to be problematic in rural areas such as the Limpopo Province, as prevailing social

conditions (e.g., parental illiteracy, parents being away from home due to migrant labour practices, and grandparents being overburdened by the need to care for children let alone get involved in school life [Frost, 1995]) limit parent's involvement in school matters. Teachers expected to introduce OBE into their classes participated in various professional development initiatives for a total of about 18 hours (A. M. Rakumako, personal communication, November 1, 2005). This is a small amount of professional development to equip teachers to be able to deal effectively with outcomes-based curriculum reforms. Moreover, given the very large class sizes experienced in the Limpopo Province – sometimes with more than 55 students per Grade 8 class, overcrowding and often severely under-resourced classroom and school environments (Frost, 1995) – it is difficult to use progressive teaching approaches under these circumstances.

An examination of the perceptions of teachers involved in OBE with those of teachers who are not revealed some interesting differences. MANOVA results indicated that OBE and non-OBE teachers appear to be similar in their preferred school environment scores and their perceptions of actual environment on five of the seven SLEQ-SA scales. However, those teachers involved in OBE are experiencing significantly more OBE Familiarity and Work Pressure than their counterparts who are not (effect size of approaching one standard deviation for these two scales). This finding is not surprising, as teachers expected to introduce OBE into their classes are required to participate in appropriate professional development workshops (see above). It was found that OBE approaches, however, require more frequent formative assessment tasks which – given the overcrowded classes (see above) – could well translate into increased work pressure on the part of OBE teachers in comparison to their non-OBE colleagues.

This study is noteworthy in that modifying, refining, validating and using a modified version of the SLEQ has provided other researchers with a widely-applicable, parsimonious, valid and economical instrument for future use in assessing and monitoring teachers' perceptions of the school-level environment in South Africa. In other phases of this study, further data collection is focused on identifying factors that contribute to variance in teachers' perceptions of their actual and preferred school level environment. In particular, following Tobin and Fraser's (1998) recommendation regarding combining quantitative and qualitative data collection methods, our study will involve gathering qualitative information in exploring whether it is possible to use the SLEQ-SA as a measure of readiness to implement and support Outcomes-Based Education in South Africa.

Although international research in the field of learning environments spans more than three decades (Dorman et al., 1997a), similar research in South Africa is only now starting to be conducted (Aldridge, Fraser & Sebela, 2004; Aldridge, Laugksch, Seopa & Fraser, 2006; Fisher & Fraser, 2003). Our study, therefore, makes a valuable contribution to the field of learning environments by laying a foundation for future studies in this area. This research is significant because a school environment instrument that includes two new scales (OBE Familiarity and Parental Involvement) has been modified and validated for future use in schools.

AUTHOR NOTE

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APPENDIX

SCHOOL-LEVEL ENVIRONMENT QUESTIONNAIRE-SOUTH AFRICA (SLEQ-SA)

	ACTUAL Describe how often each practice <u>actually</u> takes place in your school.					PREFERRED Describe how often you <u>would like</u> each practice to take place (a wish list).				
	Never	Seldom	Sometimes	Often	Always	Never	Seldom	Sometimes	Often	Always
OBE Familiarity										
<i>At this school ...</i>										
1.	1	2	3	4	5	1	2	3	4	5
2.	1	2	3	4	5	1	2	3	4	5
3.	1	2	3	4	5	1	2	3	4	5
4.	1	2	3	4	5	1	2	3	4	5
5.	1	2	3	4	5	1	2	3	4	5
6.	1	2	3	4	5	1	2	3	4	5
7.	1	2	3	4	5	1	2	3	4	5
8.	1	2	3	4	5	1	2	3	4	5
Resource Adequacy										
<i>At this school ...</i>										
9.	1	2	3	4	5	1	2	3	4	5
10.	1	2	3	4	5	1	2	3	4	5
11.	1	2	3	4	5	1	2	3	4	5
12.	1	2	3	4	5	1	2	3	4	5
13.	1	2	3	4	5	1	2	3	4	5
14.	1	2	3	4	5	1	2	3	4	5
15.	1	2	3	4	5	1	2	3	4	5
16.	1	2	3	4	5	1	2	3	4	5
Work Pressure										
<i>At this school ...</i>										
17.	1	2	3	4	5	1	2	3	4	5
18.	1	2	3	4	5	1	2	3	4	5
19.	1	2	3	4	5	1	2	3	4	5
20.	1	2	3	4	5	1	2	3	4	5
21.	1	2	3	4	5	1	2	3	4	5
22.	1	2	3	4	5	1	2	3	4	5
23.	1	2	3	4	5	1	2	3	4	5
24.	1	2	3	4	5	1	2	3	4	5

	ACTUAL Describe how often each practice <u>actually</u> takes place in your school.					PREFERRED Describe how often you <u>would like</u> each practice to take place (a wish list).				
	Never	Seldom	Sometimes	Often	Always	Never	Seldom	Sometimes	Often	Always
Student Support										
<i>At this school ...</i>										
25.	1	2	3	4	5	1	2	3	4	5
26.	1	2	3	4	5	1	2	3	4	5
27.	1	2	3	4	5	1	2	3	4	5
28.	1	2	3	4	5	1	2	3	4	5
29.	1	2	3	4	5	1	2	3	4	5
30.	1	2	3	4	5	1	2	3	4	5
31.	1	2	3	4	5	1	2	3	4	5
32.	1	2	3	4	5	1	2	3	4	5
Parental Involvement										
<i>At this school ...</i>										
33.	1	2	3	4	5	1	2	3	4	5
34.	1	2	3	4	5	1	2	3	4	5
35.	1	2	3	4	5	1	2	3	4	5
36.	1	2	3	4	5	1	2	3	4	5
37.	1	2	3	4	5	1	2	3	4	5
38.	1	2	3	4	5	1	2	3	4	5
39.	1	2	3	4	5	1	2	3	4	5
40.	1	2	3	4	5	1	2	3	4	5
Affiliation										
<i>At this school ...</i>										
41.	1	2	3	4	5	1	2	3	4	5
42.	1	2	3	4	5	1	2	3	4	5
43.	1	2	3	4	5	1	2	3	4	5
44.	1	2	3	4	5	1	2	3	4	5
45.	1	2	3	4	5	1	2	3	4	5
46.	1	2	3	4	5	1	2	3	4	5
47.	1	2	3	4	5	1	2	3	4	5
48.	1	2	3	4	5	1	2	3	4	5

	ACTUAL Describe how often each practice <u>actually</u> takes place in your school.					PREFERRED Describe how often you <u>would like</u> each practice to take place (a wish list).				
	Never	Seldom	Sometimes	Often	Always	Never	Seldom	Sometimes	Often	Always
Professional interest										
<i>At this school ...</i>										
49. Teachers discuss teaching methods and strategies with each other.	1	2	3	4	5	1	2	3	4	5
50. Teachers avoid talking with each other about teaching and learning.	1	2	3	4	5	1	2	3	4	5
51. Professional matters are discussed during staff meetings.	1	2	3	4	5	1	2	3	4	5
52. Teachers attend in-service and other professional development courses.	1	2	3	4	5	1	2	3	4	5
53. Teachers show interest in what is happening in other schools.	1	2	3	4	5	1	2	3	4	5
54. Teachers are keen to learn from their colleagues.	1	2	3	4	5	1	2	3	4	5
55. Teachers show interest in the professional activities of their colleagues.	1	2	3	4	5	1	2	3	4	5
56. Teachers meet to develop learning activities together.	1	2	3	4	5	1	2	3	4	5
Staff Freedom										
<i>At this school ...</i>										
57. I am encouraged to be innovative.	1	2	3	4	5	1	2	3	4	5
58. I am expected to incorporate a variety of teaching styles in my classroom.	1	2	3	4	5	1	2	3	4	5
59. I am able to teach topics that are not in the learning programme.	1	2	3	4	5	1	2	3	4	5
60. The rules that I am expected to follow are flexible.	1	2	3	4	5	1	2	3	4	5
61. I am free to use a variety of learning support and resource materials.	1	2	3	4	5	1	2	3	4	5
62. I am free to choose how much control I maintain in my classroom.	1	2	3	4	5	1	2	3	4	5
63. I am encouraged to implement curriculum materials in new ways.	1	2	3	4	5	1	2	3	4	5
64. I am encouraged to experiment with different teaching approaches.	1	2	3	4	5	1	2	3	4	5

	ACTUAL Describe how often each practice <u>actually</u> takes place in your school.					PREFERRED Describe how often you <u>would like</u> each practice to take place (a wish list).				
	Never	Seldom	Sometimes	Often	Always	Never	Seldom	Sometimes	Often	Always
Participatory decision-making										
<i>At this school ...</i>										
<u>65.</u> Decisions about the running of the school are made by the principal.	1	2	3	4	5	1	2	3	4	5
<u>66.</u> I have to refer even small matters to a senior member of staff for a final answer.	1	2	3	4	5	1	2	3	4	5
67. I can act without gaining the approval of a senior member of staff.	1	2	3	4	5	1	2	3	4	5
68. Teachers are asked to participate in decisions concerning administrative policies and procedures.	1	2	3	4	5	1	2	3	4	5
69. I am encouraged to make decisions without reference to a senior member of staff.	1	2	3	4	5	1	2	3	4	5
70. I must ask my subject head before I do most things.	1	2	3	4	5	1	2	3	4	5
<u>71.</u> I have no say in the running of the school.	1	2	3	4	5	1	2	3	4	5
72. Teachers regularly hold staff meetings.	1	2	3	4	5	1	2	3	4	5
Innovation										
<i>At this school ...</i>										
<u>73.</u> It is difficult to change anything.	1	2	3	4	5	1	2	3	4	5
74. Teachers are encouraged to be innovative.	1	2	3	4	5	1	2	3	4	5
<u>75.</u> There is a great deal of resistance to proposals for curriculum change.	1	2	3	4	5	1	2	3	4	5
76. Teachers like the idea of change.	1	2	3	4	5	1	2	3	4	5
77. New curriculum materials are implemented.	1	2	3	4	5	1	2	3	4	5
78. There is experimentation with different teaching approaches.	1	2	3	4	5	1	2	3	4	5
79. New and different ideas are being tried.	1	2	3	4	5	1	2	3	4	5
80. Teachers are excited about using the new OBE approach.	1	2	3	4	5	1	2	3	4	5

Items whose item number is underlined are scored 5, 4, 3, 2 and 1, respectively, for the responses Never, Seldom, Sometimes, Often and Always. For all other items, the score is the circled number.