

Managing the moderation of school-based assessment at Grade 12 level in Gauteng

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In 2000, the National Minister of Education mandated the inclusion of school-based assessment (SBA) as a component of the Senior Certificate (Grade 12) assessment. This study examines how managing the moderation of SBA could improve the quality of assessment at Grade 12 level. The literature study elucidates the underlying dimensions of managing SBA and the quantitative study investigates the perceptions of educators regarding these dimensions. The findings are consolidated into an enhanced model that calls for continuous moderation of assessment tasks at school level, based on the principles of systems theory.

Die bestuur van moderering van skoolgebaseerde assessering op Graad 12-vlak in Gauteng

Die Minister van Onderwys het in 2000 die insluiting van skoolgebaseerde assessering (SGA) as integrale komponent van die Nasionale Senior Sertifikaat op Graad 12-vlak deur wetgewing verpligtend gemaak. Hierdie navorsingsprojek poog om aan te toon hoe die bestuur van moderering die kwaliteit van assessering op Graad 12-vlak kan verbeter. Die literatuurstudie het die onderliggende dimensies van SGA uitgeklaar en ondersoek deur van 'n kwantitatiewe navorsingsontwerp gebruik te maak ten einde onderwysers se persepsies aangaande die onderhawige assesseringsdimensies te bepaal. Die bevindinge is vervat in die ontwerp van 'n unieke assesseringsmodel, gebaseer op die fundamentele kenmerke van stelselteorie, wat die effektiwiteit van kwaliteitsversekering en moderering van kontinue-assesseringstake sal bevorder.

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One of the basic functions of school management is to control the assessment of learner performance by moderating the quality of the various school-based assessment (SBA) processes. According to the South African Certification Council (SAFCERT) (2001: 11), such moderation should be concerned with the process of ensuring the validity of the assessment instruments, the fairness of the assessment processes and the reliability of the decisions made by all assessors, according to agreed standards. The policy relating to the implementation of the moderation of SBA is disseminated by means of circulars issued by the Gauteng Department of Education (GDE), and viewed as obligatory for all relevant teachers, principals and officials (GDE 41 of 2001, 10 of 2004, 6 of 2007). Each school is expected to develop its own assessment policy, which includes how assessments will be conducted and moderated in each subject. The subject head or head of department (HoD) at the school must take responsibility for the standard of assessment and moderation in the subject.

However, based on anecdotal reports, district reports and statistical moderation reports, it appears that the management of the moderation process at school level is not being conducted with due diligence or thoroughness. This can have serious consequences for public confidence in the National Senior Certificate (NSC). Limited research into managing the moderation of SBA has only been conducted by the previous quality authority (SAFCERT 2003: 31). Thus there is a gap in the body of knowledge regarding this topic (DoE 2008: 3). In addition, while it is thought that the assessment of learning is a highly specialised process that should be placed in the hands of a few assessment experts, the Department of Education (DoE) has placed it in the hands of all Grade 12 teachers, many of whose assessment skills are not always of the required standard.¹ The 2008 SBA moderation report by the Council for Quality Assurance in General and Further Education and Training (Umalusi 2009: 10) also highlighted

the poor quality and standard of the tasks set by educators; the low validity of internally set assessment tasks; the unreliability of marking instruments and the discrepancies in allocation of

1 Cf Grima 2003, Reyneke *et al* 2010, Meyer *et al* 2010, Van den Berg & Shepherd 2009.

marks; and the unbalanced weighting of the cognitive demand and difficulty of the tasks.

Umalusi's conclusion regarding the quality of the 2009 National Senior Certificate assessment and examination was that it will require a great deal of work to improve the quality of SBA. It is important to collect evidence on the implementation of SBA and, to this end, to obtain the perceptions of those who are most involved in this process. The researchers developed a suitable construct for managing the moderation of SBA in order to probe the perceptions of HODs and teachers who had or were teaching Grade 12 learners in secondary schools in Gauteng.

1. Statement of the problem

This research investigated the problem of managing the moderation of SBA at Grade 12 level in Gauteng. In order to research the problem more intensively it was useful to first identify a number of specific research questions such as what are the essential dimensions involved with managing the moderation of SBA; what theoretical framework would be appropriate to use when researching the managing and moderation of SBA; how will the various dimensions of managing the moderation of SBA be measured and what are the perceptions of the various groups of Grade 12 teachers regarding the process, and how can the findings of this research be applied to improve the current policy and procedures of managing the moderation of SBA?

2. Aims

The general aim of this research was to investigate the perceptions of Grade 12 teachers regarding the management of the moderation of SBA for which the following objectives need to be achieved: clarification of the essential features associated with SBA; an analysis of the current policies on SBA through the lens of systems theory; determining the perceptions of Grade 12 teachers in the Johannesburg districts regarding the management of the moderation of SBA with respect to its various dimensions, and developing a model with respect to managing the moderation of SBA.

3. Clarification of concepts

3.1 School-based assessment

School-based assessment (SBA) is defined as “the assessment of the whole learner on an ongoing basis over a period of time where cumulative judgments of the learner’s abilities in specific areas are made to facilitate further positive learning” (Le Grange & Reddy 1998, Reyneke *et al* 2010, Van den Berg & Shepherd 2009). This involves a system of continuous learning and improvement that focuses on the development of the learner as a whole, using processes that are embedded within the school itself and not administered from outside. Within the context of outcomes-based education (OBE), until recently a tenet of South African education policy, less emphasis is placed on memorising content and more emphasis is placed on the attainment of a variety of learning outcomes. The OBE system consists of a variety of formal and informal assessment methods, for example, projects, assignments, portfolios, oral tests, interviews, role play activities, simulations and questionnaires.

However, the learning outcomes associated with OBE do not feature in the recently published Curriculum and Assessment Policy Statement (CAPS) (DBE 2010). This document links the South African education system to external accountability standards where principals, teachers and learners are responsible for meeting certain external academic standards in terms of target percentages that need to be realised. The CAPS documents set out the content which learners need to master. Annual national assessments (ANA) in Grades R-11 and the National Senior Certificate (NSC) in Grade 12 will measure learner achievement. The subject target percentages that need to be achieved in these Grades are set out in the action plan for 2014 (DBE 2010). The emphasis is on learner and teacher performance, which is used as an indirect measure to determine how successful school leadership has been at achieving set learning targets.

3.2 Moderation

According to SAFCERT (2003: 11), moderation can be defined as “a quality assurance process of ensuring the validity of the assessment instruments, fairness of the assessment processes and reliability of the

assessment decisions by all assessors, according to agreed standards”. It may also be regarded as one of the measures adopted at various stages of the assessment process to ensure that the assessment has been conducted in line with agreed practices, so that the results can be declared fair, reliable and valid (Umalusi 2006: 5). Moderation is aimed at ensuring comparability and promoting consistency of teacher judgements with respect to levels of learner achievement. Learners who take the same subject in different schools and who achieve the same standard through assessment programmes, based on a common syllabus, will be awarded the same level of achievement. This is not to suggest that two learners who receive the same level of achievement have had the same experiences of schooling, but it does mean that they have, on balance, reached the same broad standard.

3.3 Management

Management in all business and organisational activities is the act of getting people together to accomplish desired goals and objectives efficiently and effectively. It comprises planning, organising, staffing, leading or directing, and controlling an organisation for the purpose of accomplishing a goal. Management can also be defined as human action to facilitate the production of useful outcomes from a system. Bush (2007) indicates that management is concerned with efficiently and effectively using people to attain set goals and objectives.

3.4 Managing quality in South African schools

According to Meyer (1998: 32), a quality management system is designed to manage the continuous improvement of all processes in an organisation in order to meet customer expectations. The notion of management systems is firmly entrenched in many public and private sectors, but this approach to quality management is only beginning to emerge in schools (Berry 2002: 1). According to Dhlamini (2009: vi), quality management refers to a process where quality delivery in a school, or any other organisation is systematically managed to maintain the competence of the organisation. In this respect, total quality management (TQM), quality management systems (QMS) and the integrated quality management system (IQMS) refer to quality assurance practices in any organisation that is geared to effective and

efficient client relations. Moderation can also be defined as a quality-assurance process of ensuring the validity, fairness and reliability of the assessment instruments used. De Bruyn (2002: 283) indicates that the management of organisations such as those that provide public education has been considerably influenced by the views of the quality movement.

In South Africa a plethora of quality management policies arose with Cabinet's approval, in 2005, of a policy framework for the government-wide monitoring and evaluation system (The Presidency, Republic of South Africa). Ministers in the Cabinet had to sign delivery agreements regarding the achievements of outcomes. In 2010 a Department of Performance Monitoring and Evaluation was established to monitor the achievements of outcomes. This emphasis on quality management resulted in a mandate entitled *Schooling 2025* (RSA 2010), which links the South African education system to external accountability standards where principals, teachers and learners are responsible for meeting certain external academic standards in terms of target percentages, as indicated earlier in reference to the CAPS document. When undue emphasis is placed on the administrative aspects of any quality-assurance practice in an effort to improve the "people aspect" of the system, this can lead to what Diefenbach (2006: 138) describes as managerialistic ideology. McLennan & Thurlow (2003: 7-9) indicate that managerialism is associated with an "authoritarian, hierarchical and inaccessible" management style. Bush (2007: 396) suggests that some form of bureaucratic quality management may be necessary in schools where learner achievement is below the acceptable standard, however, it can also result in school principals and teachers not accepting ownership of such externally imposed quality-control measures, leading to implementation failure (Bush 2007: 396). There is also always a gap between the policy rhetoric, as designed at the macro-level of the system, and actual reality at the ground or micro-level where it has to be implemented (Ng Pak Tee 2008: 596). Policy rhetoric of the macro-level designers is often more symbolic than actionable and, hence, it is always easier to design than to implement quality-management systems. There is also the notion that "quality" is a contested concept that is polysemic and multidimensional (Morley 2003: 170), and there is no universal agreement as to its definition.

In education, the aim of quality-management practices is to produce outcomes that not only meet the needs of learners and parents, but are also of educational merit, namely to meet professional standards (Govender 2011: 5).

4. Ethical considerations

The researchers respected the dignity of the respondents by not exposing them to intentions and motives unrelated to the research. Respect for the basic rights of the individual was assured (Creswell 2003: 201). Freedom of choice was safeguarded as everyone had the opportunity to withdraw from the research at any time. The research data were tested for construct validity and reliability by using statistical procedures such as factor analysis and Cronbach's *alpha* (Heiman 2001: 61, Field 2009: 11). Experts in the field of education management and leadership, as well as a statistical consultant reviewed the content of the questionnaire to ascertain its validity. The confidentiality of respondents was respected, while the findings and conclusions were made available to all respondents. A covering letter was included with the questionnaires, informing respondents that their anonymity would be maintained and respected, and that conclusions would not identify any schools by name. Respondents were requested to provide their honest opinions to ensure the authenticity of this research. Finally, the consent and approval of the GDE was obtained.

5. Hypotheses

At this stage of the investigation the hypotheses are stated in broad terms as they will be stated more specifically when the data are analysed statistically, since the researchers prefer to discuss the composition of the dependent variables and the distribution of the data first. With respect to the dimensions associated with the implementation of SBA, the hypotheses were stated as follows:

The null hypothesis (H₀) - There is no association between the perceptions of the various groups of respondents (independent variables) and the extent of their agreement on the dimensions associated with the implementation of SBA (dependent variable).

The alternative hypothesis (Ha) – There is an association between the perceptions of the various groups of respondents (independent variables) and the extent of their agreement on the dimensions associated with the implementation of SBA (dependent variable).

6. Theoretical framework

The education system in any country is a complex result of the forces and circumstances, which include racial intermixtures, linguistic adaptations, religious movements, as well as historical, geographical and economic conditions present in the external environment (Steyn 2002: 12). The education system operates in the context of its external environment, and any analysis of the subsystems, such as the one managing the moderation of SBA, is in a dynamic interaction with its external environment. Therefore, systems theory, with its associated notions of the whole and its component parts together with their interrelationships, will form the basis of the conceptual framework for this research. Since the aim of this study is to improve the management of moderation of SBA at Grade 12 level in Gauteng, it incorporates all aspects of the assessment processes, namely the assessment programme (input), the administration of the assessment task (process), and the assessment evidence (output). To ensure quality of the assessment system, these components of the system must comply with the required standards, hence the need to ensure their moderation. No component of a system should be studied and analysed in isolation from other components and from the system as a whole.

The provincial moderation system in Gauteng includes the provincial head office, 15 district offices and an estimated 800 secondary schools. These components must work separately, but to some extent, also function through integration. For instance, the provincial head office lays down policy on the moderation of SBA for the 15 districts, leaving each district and the schools under its jurisdiction to develop their own implementation plan. Thus, the moderation plan for each district will operate not only as a separate part, but also in integration with each of the other districts in order to establish a provincial system.

Systems theory examines the interconnection of these subsystems with the external environment in terms of input-process-output relationships. Feedback from the external environment becomes a new input into the system, informing all three parts about the status and the effectiveness of SBA implementation (Fitz-Gibbon 1998: 28). External factors such as demographic, economic and political forces may either support or make demands on the moderation system which, in turn, must respond to these external factors.

When systems move towards the cessation of activity and ultimate closure, they are said to be in a state of entropy, but this decline may be reversed through negative entropy, a process that perpetuates the differentiation of a system (Katz & Kahn 1969: 90, Kast & Rosenzweig 1985: 107, Fitz-Gibbon 1998: 27) by the establishment of order and organisation. In the case of the system in this study, entropy would be reversed through the moderation of SBA, as schools, districts and the provincial office are made aware of the constantly emerging challenges relating to assessment. Therefore, the moderating system must be adapted and skills must be acquired to cope with these challenges and thus counteract the natural tendency of entropy. Systems must be sensitive to feedback, which may be either positive, indicating that the system may continue on its course, or negative, indicating that something is wrong and suggesting an alteration to the system's current course. Systems can only react to those signals to which they are attuned and hence of transforming the input signal into useful information (Katz & Kahn 1966: 93).

If a system achieves dynamic homeostasis, it will act to preserve its essential character in equilibrium (Hansen 1994: 5), with the elements responding to one another in such a way that they promote conformity to the organisation's goals and lead to operational effectiveness. It also includes individual efficiency, when the organisation values the contributions of the individuals and begins to meet their expectations (Loock *et al* 2006: 4-6). The provincial department should develop the moderation system so that it reaches a state of dynamic homeostasis, and so that a sense of balance and fairness is achieved through moderation.

Differentiation, which is also a characteristic of open systems, refers to the ability of a system to progress from simpler to more

complex structures as they evolve and grow (Katz & Kahn 1969: 9, Kast & Rosenzweig 1985: 107, Ritzer 2008: 328). Systems have the capability to reorganise themselves at a higher level of complexity in response to a disturbing stimulus. Such a stimulus to the education system would be SBA, based on the moderation mechanisms introduced. However, the reverse may also occur, where the change to a more simplified organisational structure is referred to as dedifferentiation.

The researchers selected TQM as the preferred management approach, as it links up with the underlying conceptual framework of systems theory (Grant *et al* 2002: 209, Murgatroyd & Morgan 1994: 141). In the case of TQM, it is necessary to develop holistic thinking about the institution, by examining the institution as a complete organism, while the application of TQM also investigates the minute details of the subsystems of an educational institution.

Systems theory is, therefore, an appropriate lens through which managing the moderation of SBA for Gauteng can be conceptualised and constructed. It helps inform the researchers, and all others involved in moderation, as to the dynamics at work in the development and maintenance of related complex systems. Figure 1 illustrates a basic systems model.

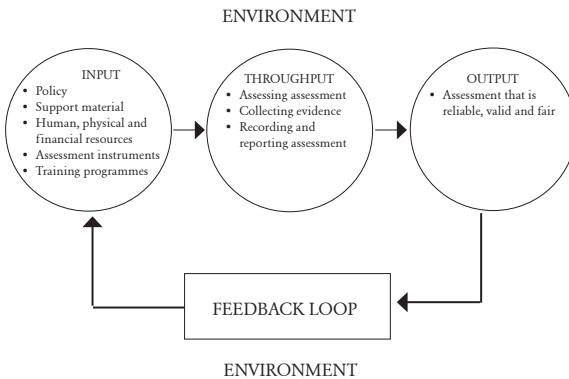


Figure 1: A basic systems assessment model indicating basic components working together to achieve an output (adapted from Lookk *et al* 2006)

7. Research design and methodology

In the positivist paradigm the object of study is independent of researchers; knowledge is discovered and verified by means of direct observations or measurements of phenomena, and facts are established by examining the component parts of a phenomenon (Babbie 2008: 45). The design of the research is best described as that between groups and between subjects, or rather as an independent design since the independent groups involve different participants (Field 2009: 15).

The object of this study was managing the moderation of SBA and the construct was the Grade 12 teachers' perceptions with respect to the various dimensions involved managing the moderation of SBA. The implementation of SBA is a mandated process and it is likely to be guided by assessment policies (GDE 41 of 2001, 10 of 2004, 6 of 2007). The subject head (or HoD), who is responsible for maintaining the standards of assessment practices at the school, needs to ensure that the teachers have a good understanding of the policy as s/he would have to manage the moderation of the various assessments conducted by the teachers under his/her jurisdiction. Managing the moderation of assessment of learner progress is likely to have various dimensions associated with it, such as teaching experience, assessment competence and training received in the moderation of assessment.

8. The population and the sample

The sampling frame (Babbie 2008: 230) used in this research was 240 secondary schools in the five Johannesburg districts (DoE 2009: 11). Each of the three larger districts consisted of approximately 60 secondary schools, compared to the 30 each of the two smaller districts (DoE 2009: 11). The researchers used these 240 secondary schools as the population for their research. They then selected a random sample of 80 secondary schools from the five districts, using a list of schools supplied by the GDE. Of the 80 secondary schools sampled, 60 were from the larger districts of Johannesburg Central, North and West, while 20 were from two districts containing a smaller number of schools, namely Johannesburg East and South. The researchers further stratified the sample as they had three groups of respondents, namely HoDs, senior teachers with more than 10 years' teaching experience in Grades 10 to 12, and teachers with less than 10 years'

teaching experience in Grade 12 who had taught or were teaching Grade 12 learners. Hence, 80 secondary schools were involved, with 12 questionnaires distributed to each school for completion by five (5) HoDs, five (5) teachers presently teaching Grade 12 with less than 10 years' experience, and two (2) senior teachers with more than 10 years' teaching experience in Grade 12. The researchers obtained the support of each of the district managers who elicited the support of the institutional development and support officers (IDSOs) to deliver the questionnaires to each of the 80 secondary schools, with appropriate explanations to the principal of each school. In addition, the questionnaires contained a letter of introduction explaining how the various respondents should be selected. The IDSOs then gathered the questionnaires over a period of two weeks and returned them to the appropriate district where they were collected by the researchers. Of the 960 questionnaires distributed, 666 were returned, giving a response rate of 69.4%, consisting of 255 HODs, 122 senior teachers and 289 teachers.

9. Research instrument

The structured questionnaire which was used to collect data consisted of three sections. Section A contained 10 questions asking respondents to provide certain biographical and demographic details, which served as the independent variables in the research. Section B contained 21 items asking respondents to indicate their extent of agreement or disagreement regarding assessment policy and its implementation. In Section C, 21 items probed the respondents' perceptions about the extent to which certain tasks related to managing moderation had occurred.

All questions were analysed using the SPSS, 15.0 programme (Norusis 2010) which subsequently became PASW 17.0 and 18.0. As the data analysis progressed, the SPSS programmes changed; hence the use of PASW 17.0. The researchers also used the latest version of Norusis, which is the PASW Statistics 18.0 guide to data analysis.

10. Pilot study

In order to determine whether a reliable and valid procedure had been developed, the researchers conducted a pilot study involving 20

secondary school teachers who were teaching Grade 12 and who were not involved in the sample to complete the questionnaire according to the instructions provided (Heiman 2001: 89). Some comments were received about the instructions and the amount of time it should take to complete the questionnaire. There was no time limit as such, but as time is a valuable commodity the researchers thought it apt to include the time it should take to complete the questionnaire. The researchers consequently removed the suggested time of completion and made the instructions more reader friendly, while changing the wording on three of the items involved.

11. Data analysis

The researchers used the literature to design items appropriate for the two broad dimensions, one with reference to the implementation of policy and procedures (Section B) and one relating to managing the moderation of SBA (Section C). The technique of factor analysis was used to establish how many subdimensions were involved in each of the broad dimensions, starting with the factor tested in Section B of the questionnaire.

11.1 Factor analysis of Section B of the questionnaire

Items in Section B were operationalised by placing them on a five-point interval scale, with 1 representing strongly disagree and 5 strongly agree, and asking respondents to indicate the extent of their agreement or disagreement with the specific item posed.

Inspection of the correlation matrix of the data in this research revealed that most of the variables had coefficients greater than 0.3, indicating that factor analysis would be analytically revealing (Field 2009: 628). However, a further problem to be considered in factor analysis is the size of the sample. The Kaiser-Meyer-Olkin measure of sampling adequacy (KMO) represents the ratio of the squared correlations to the squared partial correlations between variables (Field 2009: 647, Norusis 2010: 394). The KMO statistic varies between 0 and 1. A value of 0 indicates that the sum of the partial correlations is large in relation to the sum of correlations, indicating diffusion in the pattern of correlations; hence, factor analysis is not recommended. On the other hand, a value close to 1 indicates

that patterns of correlations are relatively compact and that factor analysis should yield distinct and reliable factors (Field 2009: 647, Norusis 2010: 395). Thus a KMO value of 0.956 was, according to Field (2009: 247) and Norusis (2010: 394), excellent; hence, the process of factor analysis would provide suitable factors. The Bartlett's test of sphericity was significant ($p < 0.05$). The Monte Carlo test for parallel principal component analysis (Pallant 2007: 191) as well as the Eigen values indicated that four first-order factors could be extracted and account for 46.7% of the variance present. The four first-order factors regarding policy and procedures associated with SBA can best be summarised using a diagram (cf Figure 2).

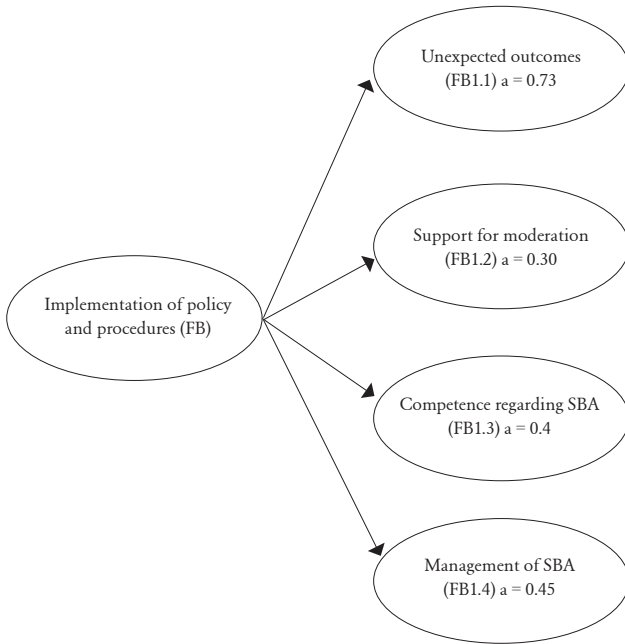


Figure 2: The four factors underlying the dimension of the implementation of policy and procedures of SBA

When tested for reliability, only one of the factors – “Unexpected outcomes” (FB1.1) – had a reliability coefficient over 0.7, which is commonly accepted in order for a factor to be reliable (Norusis 2010:

432). This factor (FB1.1) met the assumptions of normality [$D(630) = 0.05$; $p > 0.05$]; hence, parametric tests could be used to test for significance of differences between independent groups.

11.2 Factor analysis of Section C of the questionnaire

The items in Section C asked about the extent to which certain tasks related to the management of moderation occurred in reality. The five-point interval scale was anchored by “to no extent” (1) and “a very large extent” (5).

A factor analysis similar to that performed on Section B was carried out on the 21 items contained in Section C of the questionnaire. The KMO value of 0.865 with Bartlett $p < 0.05$ indicated that factor analysis would be suitable. Five first-order factors were produced and explained 57.13% of the variance present. These five factors are represented in Figure 3.

All five of these factors had a slight negative skewness, but not sufficient to disrupt robust parametric testing. Norusis (2010: 447) indicates that both parametric and non-parametric procedures can be used in the case of uncertainty. Only factors FB1.1 and FC1.1 to FC1.5 were used in the significance tests.

11.3 Testing for the significance of differences in the factor means between two independent groups

The independent design in this research project first compared the factor mean scores of two groups with one another using the independent t-test. The various hypotheses were first provided. One of the items in Section A of the questionnaire requested respondents to indicate the number of years they had taught Grade 12 classes. This information was recoded into two groups, namely 1 to 10 years and 11+ years of teaching Grade 12. The relevant hypotheses for one of the factors are indicated as follows:

- Hot.FB1.1 – Statistically, there is no significant difference between the factor mean scores of the two teaching G12 categories regarding their perceptions of the unexpected outcomes of SBA policy.
- HatFB1.1 – Statistically, there is a significant difference between the factor mean scores of the two teaching G12 categories regarding their perceptions of the unexpected outcomes of SBA policy.

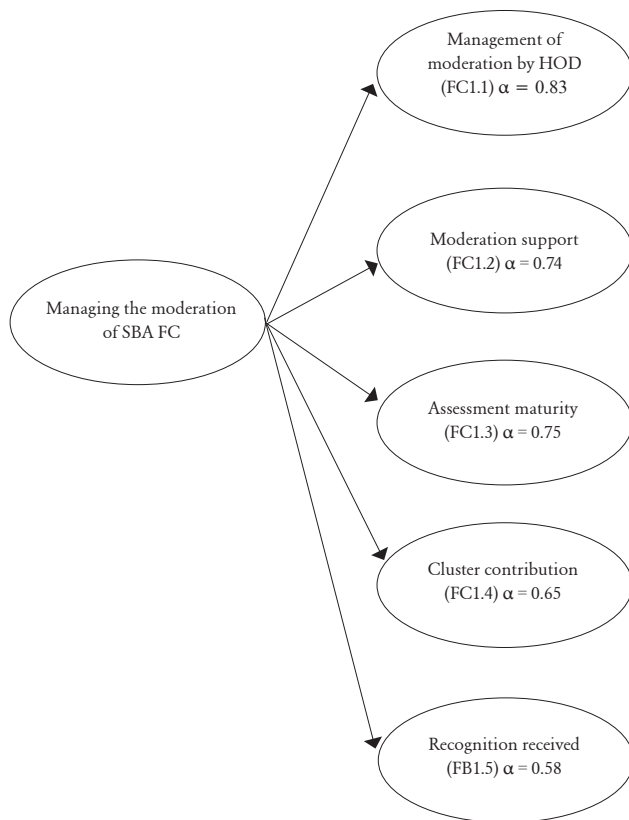


Figure 3: The five factors underlying the dimension of managing the moderation of SBA

The hypotheses for the other factors would be similar except that the name of the factor (or dependent variable) would feature; hence, they are not provided. However, Table 1 indicates the data relevant to all the factors.

Table 1: Test statistics for the two teaching Grade 12 experience groups regarding factors FB1.1 to FC1.5

Factor	Group in years	Mean score	Student t-test(p-value)
Unexpected outcomes (FB1.1)	1-10	3.01	0.000**
	11+	3.23	
Moderation management (FC1.1)	1-10	3.52	0.591
	11+	3.42	
Moderation support (FC1.2)	1-10	3.02	0.053
	11+	2.89	
Assessment maturity (FC1.3)	1-10	3.52	0.040*
	11+	3.42	
Cluster contribution (FC1.4)	1-10	4.00	0.530
	11+	3.97	
Recognition received (FC1.5)	1-10	4.10	0.004**
	11+	3.94	

Key ** = Statistically significant at the 1% level ($p \leq 0.01$)
 * = Statistically significant at the 5% level ($p \geq 0.01$ but $p \leq 0.05$)

The probability values provided in Table 1 indicate that Hot.FB1.1, Hot.FC1.3 and Hot.FC1.5 cannot be accepted. In FB1.1 (Unexpected outcomes) the group with the greater teaching experience agrees to a statistically significantly greater extent with the unexpected outcomes factor than do the less experienced group. The difference between the two factor mean scores is, for this reason, unlikely to be caused by sampling error and is presumably the result of changing the conditions of the independent variable (Years of experience of teaching Grade 12) (Heiman 2001: 349). The effect size ($r=0.10$) was small. This relationship is not due to sampling error, but represents a real relationship found in nature (Heiman 2001: 349). It seems logical that teachers with more teaching experience are likely to be more aware of the unexpected outcomes associated with policy implementation. In addition, systems theory indicates that sociocultural systems are likely to have more tension built into them, and it is plausible that the unexpected outcomes associated with policy implementation of SBA will cause resistance from the more experienced teachers, especially if the policy is new and implemented top-down (Morgan 1997: 287). Policy implementation will also disturb the dynamic equilibrium

present between the management demands and the management skills in the system. In order to restore the balance, it will be necessary to counteract the effects of policy implementation by, for example, improving the conflict-handling or management skills of the persons directly involved with policy procedures and implementation (Loock *et al* 2006: 6-7). In this way, the system restores itself to a new dynamic equilibrium at another higher level of performance, and homeostasis is maintained. Unexpected outcomes can be reduced to a minimum if one concentrates on continuous improvement, thus implying that the feedback received will be uninterrupted.

As far as FC1.3 (Assessment maturity) is concerned, the data indicates that the less experienced group had a statistically significantly higher factor mean score than did the teachers with more Grade 12 teaching experience. The more experienced teachers have been in the system for a longer period of time and probably experience less dissonance regarding their assessment maturity than do less experienced teachers (Loock *et al* 2006: 5). In addition, their greater teaching experience probably enables them to observe that assessment maturity occurs to a moderate extent only. The effect size $r=0.08$ was small. Striving for continuous improvement, as advocated by TQM, will also result in the continuous, but gradual development of the ability to assess learners reliably and fairly.

In FC1.5 (Recognition received) the less experienced grade 12 teaching group had a higher factor mean score than did the more experienced group. All teachers in the education system, at some or other time, have experienced a feeling of inequity because the effort they put into their teaching exceeds the rewards they receive. Again, this causes the dynamic equilibrium of the system to be disturbed and some or other force, such as recognition, is needed to restore the equilibrium (Loock *et al* 2006: 4-6). The person responsible for the moderation of assessment should remember that inexperienced educators need time to reflect on any feedback received if they are to benefit maximally from it, and appropriate recognition will assist acceptance of future feedback. Similar hypotheses and tests were conducted for the other independent groups and significant differences are discussed in the summary of empirical findings.

11.4 Testing for the significance of differences in the factor means between three or more independent groups

When investigating possible differences between three or more independent groups in respect of their factor mean scores, the analysis of variance (ANOVA) can be used to investigate any significant differences in the groups taken as a whole. Any differences found at this level can be probed further, using post-hoc tests; more specifically the variances between the groups can be tested for homogeneity of variance. If the variances are equal ($p > 0.05$), then the Scheffé test is used to investigate pair-wise differences. If the variances are not equal ($p = <0.05$), then the Dunnett T3 post-hoc test is used (Eiselen *et al* 2005: 121).

One of the variables in Section A consisted of three categories related to the present position occupied in the school. The three categories were HOD, senior teacher and teacher. The hypotheses were the following:

- HoA.FB1.1 – There is statistically no significant difference between the factor mean scores of the three present position-occupied groups regarding the factor “Unexpected outcomes of SBA policy”.
- HaA.FB1.1 – There is a statistically significant difference between the factor mean scores of the three present position-occupied groups regarding the factor “Unexpected outcomes of SBA policy”.
- HoS/DT3.FB1.1 – When compared pair-wise (AB, AC, and BC), there is statistically no significant difference between the factor mean scores of the three different position-occupied groups regarding the factor “Unexpected outcomes of SBA policy”.
- HaS/DT3.FB1.1 – When compared pair-wise (AB, AC, and BC), there is a statistically significant difference between the three different position-occupied groups regarding the factor “Unexpected outcomes of SBA policy”.

Hypotheses for the other five factors can be set out in a similar manner. Table 2 displays the data obtained in relation to the above hypotheses.

Table 2: Significance of the differences between the three different position-occupied groups regarding factors FB1.1 to FC1.5.

Factor	Group	Mean score	ANOVA (p-value)	Scheffé/Dunnett T3			
					A	B	C
FB1.1 Teacher perception of the extent of the unexpected outcomes of SBA policy	A	3.14	0.999	A	/	-	-
	B	3.14		B	-	/	-
	C	3.13		C	-	-	/
FC1.1 Teacher perception of the extent of moderation management of SBA at school level	A	3.67	0.000**	A	/	**	**
	B	3.36		B	**	/	-
	C	3.26		C	**	-	/
FC1.2. Teacher perception of the extent of support for moderation of SBA	A	2.86	0.025*	A	/	-	*
	B	2.91		B	-	/	-
	C	3.05		C	*	-	/
FC1.3 Teacher perception of the extent of assessment-maturity needed for SBA at school level	A	3.44	0.629	A	/	-	-
	B	3.51		B	-	/	-
	C	3.47		C	-	-	/
FC1.4 Teacher perception of the extent of contribution to cluster moderation	A	4.04	0.346	A	/	-	-
	B	3.93		B	-	/	-
	C	3.98		C	-	-	/
FC1.5 Teacher perception of recognition received for SBA	A	3.94	0.043*	A	/	-	*
	B	3.98		B	-	/	-
	C	4.09		C	*	-	/

A = HOD

B = Senior teacher

C = Teacher

** = Statistically significant at the 1% level ($p \leq 0.01$)* = Statistically significant at the 5% level ($p \geq 0.01$ but $p \leq 0.05$)

It is evident from the data in Table 2 that HoA.FC1.1, HoA.FC1.2 and HoA.FC1.5 cannot be accepted. Regarding teacher perceptions of the extent of managing the moderation of SBA at school level (FC1.1), the HODs obtained statistically significantly higher factor mean scores than did the senior teachers and teachers. Moderation at the level of the school is mostly the responsibility of the HODs. The HODs agree with the factor to a greater extent than do the other present position-occupied groups. It is also possible that their self-perception of managing the moderation process gives rise to the higher factor mean score. The HODs should bear in mind that the

focus of managing moderation should be on the assessment task given to learners and, hence, feedback should also be directed at continuous improvement of the learning process.

Regarding teacher perceptions of the extent of support for moderation of SBA (FC1.2), all three respondent groups have a neutral perception, but the HODs agree, to a smaller extent, with the support of the moderation factor. The HODs are mostly concerned with moderation in schools, but it would appear that they believe that more support can be provided by outside authorities from district and provincial levels. All concerned need to bear in mind that the system of moderation of assessment is team driven and, hence, accountability needs to be accepted at both provincial and district level. A shared responsibility is more in line with the customer focus of TQM.

With respect to teacher perceptions of recognition received for SBA (FC1.5), the teacher respondents agree most strongly with the items in the factor. Teachers are mostly at the receiving end of the moderation of assessments and they probably have a greater need for recognition, especially if it is accompanied by financial recognition. Persons involved in the moderation of SBA need to bear in mind that recognition is a mutual concern and is important with respect to the development of trust, an essential ingredient if feelings of dissonance are to be overcome and homeostasis restored to the system. This may again emphasise the self-perceptions of HODs at school level, who are accountable for the management of moderation and who perhaps need to emphasise that the system, and not the individual, may be at fault.

There were also statistically significant differences found between the following three or more independent groups, namely number of years' teaching experience (rA2), highest educational qualifications (rA5), average number of learners per class taught (rA10), and Grade 12 pass rate in 2005 (rA8.1), in 2006 (rA8.2) and in 2007 (rA8.3). These findings are not discussed in detail but are captured in the summary of empirical findings.

12. Summary of empirical findings

A summary is provided by listing each of the factors tested for significant associations with brief discussion.

12.1 Unexpected outcomes of SBA policy and procedures (FB1.1)

Unexpected outcomes relate to the process of SBA policy implementation and the issues related to policy implementation that emanate from teachers. In most instances, these are unintended consequences. Analysis of the data indicated that respondents with greater teaching experience agreed more with the unexpected outcomes. Teachers from urban areas agreed to a greater extent with the unexpected outcomes of SBA policy than did teachers from rural areas. The more experienced teachers (11+ years) agreed to a greater extent that the SBA policy had unexpected outcomes than did the group with 10 or less years of teaching Grade 12. Teachers whose learners achieved the highest pass rates in Grade 12 agreed to a greater extent that the SBA policy had unexpected outcomes than did teachers with learners who achieved a lower pass rate.

It seems logical that teachers with more experience are likely to be more aware of the unexpected policy outcomes associated with implementation, since their more extensive experience allows them to be more alert when it comes to unexpected outcomes.

12.2 Management of moderation by HODs (FC1.1)

Moderation management refers to the degree to which moderation is effectively managed at school level. Analysis of the data collected indicated that teachers from rural areas perceived moderation management as occurring more often than did their urban counterparts. HODs agreed to a greater degree with the extent of moderation management at school level than did senior teachers or teachers with less teaching experience. The more experienced teachers (11+ years) agreed to a larger extent with the management of moderation than did the 1-10 years group. Teachers with class sizes of more than 41 learners agreed to a smaller extent with the moderation of management of SBA.

12.3 Support for moderation (FC1.2)

Support for moderation relates to the extent that teachers consider moderation to be functional at the school, district and provincial levels. Analysis of the data collected indicated that rural teachers perceived the extent of support for moderation of SBA to be greater than did

urban teachers. More experienced teachers (11+ years) disagreed to the greatest extent with the statement that the moderation of SBA is supported at district and provincial levels. Teachers with the lowest qualifications (diploma) indicated support for the moderation of SBA to a greater extent than did teachers with B-degree or postgraduate qualifications. Teachers whose learners achieved a higher pass rate in Grade 12 agreed to a greater extent with the support for moderation than did teachers whose learners achieved a lower Grade 12 pass rate. The higher the school pass rate, the lower the agreement with the support for the moderation of SBA.

It thus appears that teachers in rural areas, teachers with low qualifications and teachers with low Grade 12 pass rate perceive that there is a need for greater support from district and provincial levels in managing moderation.

12.4 Assessment maturity (FC1.3)

Assessment maturity refers to the level of knowledge and expertise demonstrated by teachers in the implementation and moderation of SBA. Analysis of the data collected revealed that less experienced teachers had a higher level of dissonance regarding their assessment maturity. Teachers whose learners had the highest pass rate in Grade 12 agreed to a smaller extent that assessment maturity was necessary for teachers regarding the moderation of SBA. It appears that teachers in poorly performing schools do not have the ability to transform the feedback they receive from the environment as efficiently as can the teachers from higher achieving schools. This seems logical as it is always easier to accept credit for a good result or outcome than it is for a poor result or outcome.

12.5 Extent of recognition received (FC1.5)

Recognition refers to the acknowledgement and rewards received by teachers for their efforts relating to the implementation of SBA. Analysis of the data collected revealed that less experienced teachers felt a greater need for recognition of their efforts with assessment/moderation than did experienced teachers. Rural teachers agreed to a greater extent that recognition for SBA should be more readily available. Teachers strongly support the need for recognition of their

efforts in moderation compared to the HODs and senior teachers. The less experienced teachers (1-10 years) agreed to a greater extent that recognition was received for SBA than did the more experienced group of 11+ years of teaching experience.

Teachers do experience feelings of inequity, because the effort they put into their teaching exceeds the rewards they receive. This causes the dynamic equilibrium of the system to be disturbed and a force such as recognition is needed to restore the equilibrium (Loock *et al* 2006: 4-6).

12.6 An improved model for the moderation of SBA

The empirical findings of this research indicated that an integration of the empirical findings should improve the basic systems model, as postulated in Figure 1. Figure 4 illustrates the three basic components of the assessment system, namely assessment requirements (inputs), assessment administration (process) and assessment evidence (output), and illustrates how these components can be moderated, using the factor analytic findings of this research.

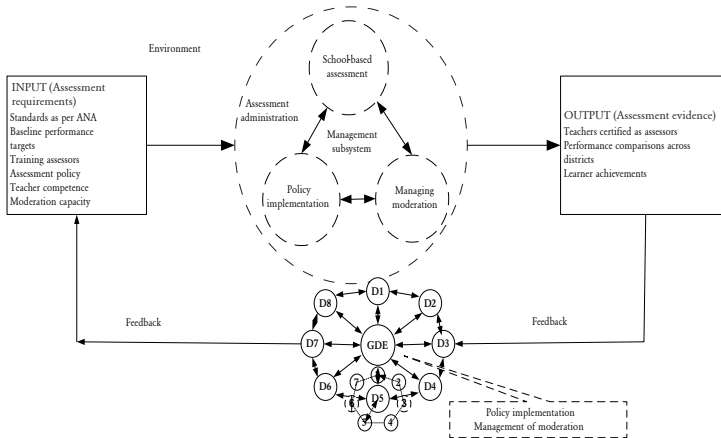


Figure 4: The enhanced model for managing SBA

The model in Figure 4 is an improvement of the first model in the sense that the feedback loop allows for districts and schools to debate issues of assessment policy and the management of moderation by schools. Thus, the inputs into the enhanced model will also contain the opinions of schools on the standards and baseline targets that need to be attained. Schools will thus have greater clarity regarding answers to who, what, when and how the moderation of SBA should be implemented, as shown in the administration process. This allows for the holistic implementation of policy and management of moderation at school level.

13. Implications of the research

In order to reduce the present gap between the design of the moderation of SBA assessment processes at the macro-level by the DoE and its implementation at micro-level by schools, a more collaborative approach to moderating assessment is needed. Systems theory is a useful conceptual framework for such a collaborative approach to SBA, as it allows both for an integration of the various systems and subsystems and for a more holistic view of managing the moderation of SBA. The systems approach allows for all aspects of the assessment process, namely the assessment policy, the administration of assessment and the evidence of assessment to be viewed in a holistic manner, by involving stakeholders at both macro- and micro-levels in a collaborative dialogue, as indicated in the enhanced model (*cf* Figure 4).

The management of moderation of SBA is built on two latent dimensions, namely the implementation of policy and procedures, and managing the moderation at school level. When policy is implemented, there is always the danger of unexpected outcomes, such as increased tensions among teachers, an increased workload and excessive paper work. Ignorance of these unexpected outcomes increases the entropy in the system, while a collaborative approach to the moderation of SBA, as suggested by the cluster formation between districts and their schools in the enhanced model, could stop the entropy and restore dynamic homeostasis to the assessment system. In the current situation, there is minimum engagement of teachers in the development of policy and procedures relating to the

implementation of SBA. There needs to be greater consultation with teachers who are the key implementers in the process of assessment.

At school level, there should be a system that ensures continuous moderation of the assessment tasks. The assessment evidence by the senior teacher in the subject, or the HOD, must be provided to the teacher when feedback on assessment is given. Where more than one teacher is teaching the subject at the same grade level, there could be cross-moderation and the setting of common assessment tasks. This approach of working in teams is in keeping with one of the pillars of TQM. Feedback must be provided to the teacher designing the task and the teacher/s that have marked the assessment tasks, so that this could lead to improvement in the designing and marking of assessment tasks as espoused by systems theory. In addition, a collaborative approach based on consensus being reached between the teacher (insider) and the moderator (outsider) needs to be implemented. In terms of this approach, the insider is more closely associated with the assessment of the learner and, therefore, his/her judgement cannot be easily overruled by the outsider. The outsider is not regarded as the final expert, but as the individual who provides another perspective that must be reconciled with that of the insider.

There is a need for greater collaboration between schools with excellent Grade 12 results and those with poor results as perceptions of the management of SBA are, to a large extent, based on achievements in the NSC examination. The enhanced model allows for all schools to meet with their districts, and these clusters can be used for sharing expertise with one another regarding SBA and the management of internal moderation.

As far as class size and its relationship to the support for the management of moderation of SBA are concerned, it was found that there is a direct relationship between class size and the extent of the support for the management of moderation of SBA. This implies that, as class size increases, so does the need for support for the process of moderation.

15. Conclusion

This study highlighted the shortcomings that exist in Gauteng in the field of managing the moderation of SBA. The literature study indicated that the management of SBA consisted of two broad dimensions, namely the implementation of policy and assessment procedures, and managing moderation at school level. The quantitative study allowed the views of educators to be obtained and consolidated into a model that enhances the current moderation systems in Gauteng. This improved model calls for continuous moderation of assessment tasks and assessment evidence at school level, which must be based on the principles of the systems theory. The importance of intensive consultation with teachers cannot be overemphasised, as this will help avoid the unintended consequences that are currently evident in the system. Consultation and dialogue will minimise the disjuncture between teacher expectations and what the process finally delivers. In addition, the intensive training of teachers is critical to enhancing maturity levels, that is, knowledge and experience in assessment. Moderation should not be based purely on a single mode of moderation, but rather on a mixed model that combines the cluster approach with the individual moderation approach.

These strategic interventions, underpinned by a strong management thrust, will help improve the reliability and validity of SBA. The establishment of a rigorous moderation management system for SBA cannot be achieved overnight in a province as diverse and large as Gauteng. There is, however, a need to establish the foundational principles proposed in this research and, over the next few years, the building blocks of the model can be added, on a phased-in basis. However, priority must be given to the school, which is the locus of assessment implementation and moderation of SBA.

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