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Profile of South African secondary-school teachers' teaching quality: evaluation of teaching practices using an observation instrument

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ABSTRACT

The need for quality teaching is reflected in the poor performance of students in international tests. Teachers' practices and contextual factors could contribute to substandard quality of teaching in South Africa. Several studies indicate that successful learning is largely dependent on the teachers' practices in class. The focus of the present research was to profile the effective teaching practices of 424 secondary-school teachers in the Gauteng Province, South Africa. Teachers were observed by trained observers using a valid and reliable observation instrument measuring six domains of effective teaching practices. Results showed that teachers find it difficult to differentiate in class and to activate learning. Additionally, teachers with more than 15 years of teaching experience scored lower than teachers with less experience, in all six teaching domains. Presumably, experienced teachers may lack motivation and/or insufficient training in implementing interactive and differentiated teaching methods that are needed for effective teaching practices.

Introduction

Global, economic and technology developments require an increasingly skilled workforce that relies on high-quality teaching for all (Fenstermacher and Richardson 2005). The Global Monitoring Report (Education for All) identifies quality teaching in students' level of cognitive development and the acquisition of values and attitudes of responsible citizenship (UNESCO 2005). Whereas, Fenstermacher and Richardson (2005) state that quality teaching not only accords with high standards for subject matter, but also with morally defensible and rationally sound principles of instructional practice. Teachers' practices include their professional and personal features, pedagogical knowledge, effective classroom management, creation of a safe learning climate and positive teacher–student relationships (Murray 2002). The teacher must exhibit positive behaviour and also teach content that is appropriate for the learning context, while using various instructional methods to reach the appropriate outcomes (Kohl 2013). Our study is in line with the Dakar Framework for Action which

emphasises that the quality of learning outcomes depends on the teaching and learning process in the classroom as well as the teachers' practices in achieving these outcomes (UNESCO 2000).

The aim of the study was to evaluate secondary-school teachers' teaching practices using an observation instrument and to answer the following research questions:

1. Which contextual factors can influence effective teaching and learning in secondary schools?
2. How do personal factors (subject, gender, grade level and teaching experience) of teachers contribute to differences in their effective teaching performance?
3. How do South African secondary-school teachers perform in the classroom in terms of effective teaching practices?

The South African context

Various studies mention that teachers' practices and contextual factors contribute to the substandard quality of teaching in South Africa. These factors include: poverty, which has not been diminished significantly (Mouton, Louw, and Strydom 2012), ill equipped and large classes; the 1:32 ratio of teachers to students in public schools; poor management and school leadership, where teachers do not always attend to their classes (Reddy et al. 2010); lack of parental involvement in their children's education; students' linguistic and cultural diversity; sexual abuse of student girls – often by male school teachers (Chisholm 2000); pregnancy; inadequately trained teachers who are not always able to teach a diverse population with various needs (Vandeyar and Killen 2007:101); teachers (12%) diagnosed with AIDS/HIV, lack of teaching and learning resources and students with insufficient reading and writing skills (Spaull 2013). Bloch (2011) elaborates, emphasising that students with limited literacy and numeracy skills will not be able to acquire the high-level skills a country needs to address inequality and poverty for development and growth.

The ability to teach effectively and show appropriate teaching behaviour towards students, can be considered the most valuable competency in achieving higher student performance levels in both schools and higher education (Ingvarson and Rowe 2007). The teacher can be considered as the main source of effective teaching and learning (Coe et al. 2014). Therefore, the development of teachers' teaching practices and their professional growth is vital. Ramsey (2000) postulates that teachers should be equipped with sufficient content knowledge and pedagogical skills, and exhibit positive behaviours that will be effective in addressing the learning needs of all students regardless of their diverse backgrounds.

Pre-apartheid education in South Africa

Before 1994, South African education was characterised by an apartheid system in which students attended segregated schools according to race; there was unequal distribution of expenditure of resources for effective teaching; and not all schools taught the same national core curriculum (Msila 2007). Thus the education of the ethnic majority was poor in quality and separate education systems were designed so that all four ethic groups (White, Black, Coloured and Indian) could develop and live independently. Higgs and Van Wyk (2007) point

out that "Black" schools were characterised with overcrowded classrooms, dilapidated build-ings, unqualified teachers and inadequate facilities.

Although the education expenditure on ethnic majority students was annually increased, until 1994 the ethnic minority (white) schools received two and a half times more of the education budget. In addition mother tongue instruction had been the norm in African schools for the first eight years of schooling (Centre for Development and Enterprise [CDE] 2015). At that stage the potential benefits of mother tongue development was not realised as ethic majority students opted to be educated in English, rather than their mother tongue. Moreover, all curricula were employed using teacher-centred teaching- and assessment methods that evaluated students' ability to memorise and recall facts (Higgs and Van Wyk 2007).

Post-apartheid education in South Africa

Consequently, the post-apartheid government inherited an education system with vast ine-qualities and reduced school attendance rates of students and teachers; conflict, violence and disruptions in and around schools; and poor academic achievement (Todd and Mason 2005). A single education system was established for all national cultures. Those who fought in the struggle were rewarded with senior specialised appointments in the education field, regardless of their lack of knowledge and management competencies in education (Lawack 2009). Despite formal changes in law and transformation in the education system, many ordinary public schools still do not perform as expected (Lekgoathi 2010). In addition, to improve a culture of learning and teaching, outcome-based education (OBE) in the form of Curriculum 2005 was introduced in all schools, although OBE has already failed in some first world countries (Mouton, Louw, and Strydom 2012).

Curriculum 2005 was regarded as fundamental to curriculum transformation and the improvement of effective teaching practices at all levels (Ercan 2012). However, this curric-ulum did not achieve the intended outcomes and was revised mainly because of lack of resources in schools and insufficient teacher training to implement these changes. Consequently, several revisions of the curriculum followed and in 2012 the Curriculum and Assessment Policy Statement (CAPS) was adopted focusing on subject knowledge and stand-ardised assessment methods (South Africa, Department of Basic Education 2013).

Despite many changes in the South African education system in the past 20 years, the improvement of the quality and levels of educational outcomes in the schooling system is still a concern. The extent to which students' learning outcomes are achieved is monitored through the administration of the Annual National Assessments (ANA), which includes stand-ardised Home Language, First Additional Language and Mathematics tests, written by all students in Grades 1 to 6 and 9, and is managed by the schools themselves. The 2013 results showed the following average percentage marks: Home Language = 44.0%, Second Home Language = 38.1% and Mathematics = 15.9%). Assumedly, the language of instruction could affect students' academic performance and students display limited critical thinking and problem-solving skills in Mathematics (Spaull 2013). Thus, mother tongue-instruction could contribute to students' effective learning. Furthermore, research indicates that the South African education system still encounters major challenges in providing quality education for all students, mainly due to the existing socio-economic problems (Ercan 2012). If teachers understand these factors and the impact of effective teaching practices on their students,

they may be able to assess their needs and strengths and employ innovative supporting teaching and learning strategies.

Notwithstanding these challenges that could influence the quality of education, Cohen et al. (2009) stress the urgency of establishing a positive school climate and culture to safeguard students' right to quality teaching. To foster quality teaching, teachers need to acquire effective classroom management, communication and creative teaching skills and be able to create a secure learning environment where students are motivated to engage interactively in learning activities (Kyriacou and Wilkins 1993). Additionally, Seidel and Shavelson (2007) and Van de Grift (2007) reveal that teachers' teaching practices significantly affect students' learning and teachers need to be sufficiently trained to improve the quality of education.

Spaull (2013) postulates that regardless of the improvement of teachers' training qualifications, many teachers are still not sufficiently trained to teach the subjects and grades they are assigned to teach. Furthermore, the rationalisation process of the 1990s caused many of South Africa's best qualified and experienced teachers to resign from the teaching profession and one third of newly qualified teachers left the country to teach in other countries. Armstrong (2009) states that capable teachers are inclined to leave the teaching profession at an early age, seeking for better career opportunities. Contributing to this problem some teachers show low values and dedication to the teaching profession by arriving late to class, leaving early, do not always provide significant feedback on students' homework and devoting more time to administrative duties (CDE 2015).

Theoretical foundation

Globally, various instruments are used to assess teaching quality. In several states of the USA, the National Board for Professional Teaching Standards (NBPTS) approach is used to assess the teaching quality of teachers by observing how they prepare the way for productive student learning; establish a favourable context for learning; advance student learning; and support teaching and learning (Ingvarson and Rowe 2007). In Australian schools, the quality of teachers' teaching is measured by understanding three interrelated domains of quality, namely, the professional practices that influence students' learning outcomes; contextual factors influencing the dynamics of schools and the school processes employed to enhance students' learning; and the outcomes, behaviour, and competencies of teachers and school leaders that influence students' learning outcomes (Zammit et al. 2007). Additionally, Coe et al. (2014) group the characteristics of quality teaching in domains such as pedagogical content knowledge, quality of instruction, classroom climate, classroom management, teacher beliefs and teacher professional behaviours. These characteristics contribute to effective teaching and can be used in combination with other characteristics at different times.

Felder and Silverman (1988) add that the inductive teaching method (i.e. problem-based learning; discovery-based learning) could also contribute to quality teaching. In addition, the Classroom Assessment Scoring System (CLASS), constructed by Pianta and Hamre (2009), tested and validated three broad domains of classroom support. These were the emotional support domain (positive classroom climate, teacher sensitivity and student perspectives), organisational support domain (effective behaviour management, productivity and instructional learning formats), and the instructional support domain (the dimensions of concept

development, quality of feedback and language modelling). Likewise, Danielson (2013) constructed domains such as identifying, planning and preparation, classroom environment, instruction and professional responsibilities to evaluate quality teaching.

The first version of the International Comparative Analysis of Learning and Teaching (ICALT) observation instrument was developed in 1998 by Van de Grift and Lam (Maulana, Helms-Lorenz, and Van de Grift 2014). This tool's reliability and predictive validity was tested in Dutch primary schools and used by education inspectors observing teaching quality in Scotland, England, Flanders, Slovakia and Lower Saxony). This instrument proved to accurately measure the skill levels of secondary-school teachers. In refining Van de Grift's observation instrument, similar teaching quality domains as identified in observation measurements of Pianta and Hamre (2009) and Danielson (2013) were included. Danielson (2013) agrees that various domains that include effective characteristics of teacher practices can be interrelated with one another and all could contribute to teacher quality. In the observation instrument for effective teaching practices, Van de Grift (2007) distinguishes the following domains: safe and stimulating learning climate, classroom management, clear instruction, activating learning, differentiation and teaching learning strategies. The researchers regarded the instrument as appropriate to observe teachers facing previously mentioned challenges, in the South African context. In view of poorly managed schools, the increment in diverse classrooms and the need to apply various teaching methods and strategies to accommodate learners' needs, the observation instrument could provide a clear understanding of how teachers are addressing differentiated teaching in the South African context.

Safe and stimulating learning climate

Haynes, Emmons, and Ben-Avie (1997) emphasise that essential rudiments for a stimulating learning climate including: caring and respectful relationships between teachers and students, support for students' different learning styles, respect for students' values and experiences that they bring to school, order and disciplined behaviour of both teachers and students, teacher dedication to achieving successful learning outcomes and the development of students' self-concept (Huang 2010). These aspects are also incorporated in the ICALT observation instrument and applicable to the learning climate of South African schools.

A favourable learning climate could be created by positive teacher behaviour that includes showing respect for the diverse backgrounds of students, fostering mutual respect between students and teachers, creating and maintaining a relaxed and safe learning environment, and promoting students' confidence (Maulana, Helms-Lorenz, and Van de Grift 2014).

Classroom management

Effective classroom management is an indispensable aspect of teaching quality (Harrell et al. 2004). Kunter, Baumert, and Köller (2007) point out that lesson time is not always apportioned to learning activities but is often used for non-curricular activities, organisational matters, or dealing with disciplinary problems. Well-planned teaching learning strategies are vital for the effective use of teaching time where students are exposed to maximum learning opportunities (Wang, Haertel, and Walberg 1993).

Clear instruction

Information processing and adequate student performance depend on clear instruction (Ausubel 1978; Gagne, Briggs, and Wager 1992). At the beginning of the lesson, the teacher should ensure that all students know what will be expected from them at the end of the lesson by clearly stating the lesson outcomes (Todd and Mason 2005). In addition, subject matter should be clear and understandable; students should receive regular feedback to establish their own progress; all students should be actively engaged in the lesson; students should be encouraged to perform; the teacher should teach in a well-structured manner and use didactic aids while explaining new concepts (Perkins and Simmons 1988; Vandeyar and Killen 2007; Maulana, Helms-Lorenz, and Van de Grift 2014). Clear instruction can also be supported by the ways in which teachers implement the curriculum, apply content to students' everyday life situations, and use language that is understandable to them (Vandeyar and Killen 2007).

Activating learning

Downer, Rimm-Kaufman, and Pianta (2007) contend that teachers can activate successful learning in their classes using concepts and skills relevant to students' everyday lives, asking questions that encourage them to analyse and reason, providing sufficient support, and giving regular feedback on their efforts. Moreover, a framework to activate learning can be constructed by the creation of inter-active learning activities, building students' self-confidence, encouraging them to find solutions to problems, asking stimulating questions that encourage students to report and reflect on actions, allowing students to think aloud during discussions, and giving interactive instructions where they can collaboratively work with others in finding solutions to problems (Van de Grift 2007).

Differentiation

Differentiation can be described as flexible, but organised ways of proactively adjusting teaching and learning methods to accommodate students' various learning preferences and needs to reach their full potential (Lawrence-Brown 2004). A framework for differentiated instruction can be constructed from various theories, such as supportive and adjustable teaching materials, methods and strategies that teachers use to include all students in the learning activities regardless of their differences in ability (De Jager 2013, 2015); the adjustment of the learning environment, content, process and product for effective learning (Rock et al. 2008); personalised instruction that contributes to all students' learning (Tomlinson 2005); various ways to include different learning preferences and students' individual interests (Anderson 2007); instruction responsive to students' various interests, depiction of the readiness levels and learning profiles of students (Tomlinson 2005); and understanding how students assimilate and understand facts (Anderson 2007).

Teaching and learning strategies

Strategies such as cognitive and meta-cognitive instruction have been used across various academic domains and activities with students showing different abilities and have

constantly revealed positive effects on student learning (Montague and Dietz 2009). Cognitive strategies aim to help the student reach a specific objective while metacognitive strategies precede the cognitive activity to ensure that the objective has been reached (Roberts and Erdos 1993). The efficiency of the cognitive approach in quality teaching is that it could be highly interactive, sequenced and guided instruction, which leads to the motivation of students to eventually perform the activity independently (Pressley et al. 1990). It is believed that cognitive and metacognitive strategies can effectively be used to instruct all students with different abilities (Borkowski, Carr, and Pressley 1987) and could be essential for effective teaching practices in South Africa's multicultural teaching environment.

Research design

Sample

Secondary-school teachers ($N = 424$) of 27 public schools situated in the Gauteng Province of South Africa were voluntarily observed by trained student teachers. The observed participants included male ($N = 210$) and female ($N = 214$) secondary-school teachers with diverse teaching experience ranging from less than five years ($N = 89$) to above 30 years ($N = 21$). The longest term of teaching experience was 5–10 years ($N = 98$). It was incidental, that with regard to the teaching subject, ($N = 190$) of the teachers taught science subjects (i.e. Mathematics, Physical Sciences and Life Sciences), and the remaining ($N = 233$) taught non-science subjects (i.e. Language, Geography, Computer Application, Economics, Accounting, Business Studies, Life Orientation and Economics and Management Sciences). Permission to conduct the study in selected schools was granted by the Gauteng Department of Education and the principals of the schools.

Training of observers

To make sure that only observers with sufficient knowledge concerning effective teaching practices were invited to become observers, we set up criteria for inclusion as follows. First, we selected only eminent final-year student teachers ($N = 42$) as observers based on academic performance. The selected student teachers have completed their academic and practical course and were awaiting graduation as qualified teachers. Effective teaching is based on the knowledge and skills they have obtained from the teacher institution and the internship schools. Not only were they outstanding academically, but also they were highly motivated and very engaged in teaching. The majority of them already had appointments at schools after graduation. Prior to the observation training, we distributed comprehensive theoretical frameworks underlying the observation instrument about effective teaching to the selected student teachers. They were asked to study the theoretical frameworks and the accompanying observation instrument extensively. At the beginning of the training, student teachers' understanding and comprehension of the theoretical framework and the observation instrument were verified in a discussion session. Detected differences were resolved further through intensive discussion. Each student teacher received intensive observation training. Observations were conducted in English as the official language of instruction, therefore there was no need to translate the instrument.

Furthermore, training included an in-depth explanation of the observation instrument and how to observe and evaluate effective teaching practices and apply appropriate judgements. Once scoring consensus with the way of scoring was reached (cut-off criteria for good consensus: ≥ 0.70) during the training, students commenced with the observations of teachers' classroom practices in the natural setting. The inter trainee-consensus percentage of the student teachers was 87%. The ratings of the trainees did not deviate significantly from the ratings of the norm group. Additionally, intra-class correlation coefficients ranged between 0.77 and 0.83. These correlations are considered a good level of agreement between raters for observational evaluation (Cicchetti and Sparrow 1981).

Observation instrument and procedure

We used the original English version of the ICALT observation instrument. Observations were scheduled with the participating teachers and lasted for approximately 45–60 min. The observations were executed mostly in the early and late mornings ($N = 246$), within a period of one month at the beginning of the second semester.

Teachers' practices were observed and evaluated using a quantitative approach. The observation instrument to measure effective teaching practices (Van de Grift 2007) consisted of 32 items grouped in six domains (see Appendix A).

The observers applied scores according to their observations of effective teaching practices by rating each dimension on a 4-point scale, varying from 1 (completely not true) to 4 (completely true). Scores of 1 – 2 represent low quality teaching skills and scores of 3 – 4 indicate high quality (Maulana, Helms-Lorenz, and Van de Grift 2014).

Student academic engagement during the lesson was observed by means of a three-item scale developed by Van de Grift (2007) and used as a criterion. This scale emphasised the psychological and behavioural engagement of students (see Appendix A). The reliability of student engagement measure was 0.84, which indicates a good level of internal consistency.

Analytic approach

Prior to the analyses of data, we conducted preliminary analyses to examine the reliability and validity of the observation instrument used for the South African context. An internal consistency test (using Cronbach's alpha) was done to examine scale reliability. Exploratory factor analysis was performed to examine construct validity of the six domains of effective teaching practices. Finally, correlational analysis was done to examine predictive validity, with student engagement as a criterion.

Descriptive analyses were employed to answer the first research question. To answer the second research question we conducted MANOVA. Teachers' personal factors were treated as independent variables and the six domains of effective teaching practices as dependent variables. Preliminary assumption testing was conducted to check for normality, linearity, univariate and multivariate outliers, homogeneity of variance–covariance matrices, and multicollinearity. In answering the third question, several research studies were used to identify contextual factors most commonly found in South African public schools.

Results

Psychometric quality of the observation instrument

Results of the reliability analysis show that the internal consistency of the six effective teaching practices scales are above the satisfactory level. The Cronbach's alpha coefficients are as follows: learning climate (0.78), classroom management (0.77), clear instruction (0.81), activating learning (0.83), differentiation (0.81), and teaching learning strategies (0.79). Furthermore, mean inter-scale correlations of the scales are as follows: learning climate (0.49), classroom management (0.54), clear instruction (0.60), activating learning (0.62), differentiation (0.49), and teaching learning strategies (0.58). These values indicate that although there is an overlap among scales of effective teaching practices the scales measure distinct aspects of effective teaching practices sufficiently.

Furthermore, results of exploratory factor analyses show that six factors (with eigenvalues larger than 1.0) could be extracted. An inspection of the factor loadings shows that the six factors represent the six scales of effective teaching practices. With regard to predictive validity, positive and significant relationships between the six scales of effective teaching practices and student academic engagement were found. The results are as follows: learning climate ($r = 0.43$, $p < 0.01$), classroom management ($r = 0.51$, $p < 0.01$), clear instruction ($r = 0.53$, $p < 0.01$), activating learning ($r = 0.57$, $p < 0.01$), differentiation ($r = 0.51$, $p < 0.01$) and teaching learning strategies ($r = 0.62$, $p < 0.01$) correlation coefficient classification[1], the strength of correlation between the six domains of effective teaching practices and academic engagement is generally large. This indicates a strong relationship between effective teaching practices and academic engagement.

Profiles of South African (Gauteng) secondary-school teachers' teaching practices

Following Maulana, Helms-Lorenz, and Van de Grift (2014), the scores for effective teaching practices were categorised in the following criteria: 1 – 2 = "insufficient", 2 – 3 = "sufficient" and 3 – 4 = "good". The category "good" is further sub-classified into good (3 – 3.5) and excellent (3.51 – 4) based on empirical consideration.

The observed results in the six domains are valuable for establishing the profile of effective teaching practices in South African secondary schools. The analysis of the scores showed that effective teaching practices in the various domains were not all contributing to effective teaching. Participants scored the lowest for the domains "activating learning" and "differentiation". The results for each domain, and in some cases the events that contributed to the scores of these domains, are discussed below. The scores were converted to percentage (see Table 1) and the number of teachers listed in the discussions to highlight and compare the differences in responses.

Table 1. Scores on the ICALT-scales (%).

	Insufficient	Sufficient	Good	Excellent
Safe and stimulating learning climate	4.7	27.0	46.9	21.0
Classroom management	4.7	30.2	46.5	18.0
Clear instruction	5.0	35.8	43.0	16.0
Activating learning	5.4	45.0	35.4	14.0
Differentiation	11.0	44.6	33.4	11.0
Teaching and learning strategies	4.2	40.6	45.3	10.0
Engagement of students	5.7	24.3	38.7	31.0

Safe and stimulating learning climate

Most of the teachers were able to create a positive learning climate in the observed lesson. Additionally, 13.3% ($N = 56$), of these teachers did not always show respect for students in their behaviour and language and 31% ($N = 131$), did not foster mutual respect in class.

Classroom management

Only 47% ($N = 20$), of the teachers were regarded as "insufficient" and 302% ($N = 127$), merely "sufficient" in managing their classes, while 465% ($N = 198$), scored "good" and 186% ($N = 79$), "excellent". Teachers' inability to manage their class effectively can contribute to disciplinary problems and poor student achievement.

Clear instruction

The "insufficient" (50%; $N = 21$), and "sufficient" (358%; $N = 151$), scores were higher than in the previous two domains but declined in the "excellent" (16%; $N = 68$), and "good" (432%, $N = 18$), group. In this domain there was strong agreement that teachers presented and explained the subject matter clearly but did not always apply didactic aids when explaining assignments.

Activating learning

More teachers scored "sufficient" (45%; $N = 190$), than "good" (354%; $N = 151$), The "insufficient" (54%; $N = 23$), and "excellent" teachers (160%; $N = 60$), stayed nearly consistent when compared with the "clear instruction" domain. It is strongly agreed that teachers offer activities and work forms that stimulate students in active learning. However, the events scores indicated that 32% ($N = 136$), of teachers did not clearly specify the lesson aims at the beginning of the lesson and 38% ($N = 161$), of the teachers did not always assist weaker students in building their self-confidence. Van de Grift (2007) highlight the importance of stating a clear objective before the lesson commences and the development of students' self-confidence.

Differentiation

The scores of this domain were much lower in comparison with the other domains. Scores dropped to 106% ($N = 45$), for "excellent" teachers, 33.4% ($N = 142$), for "good" and 446% ($N = 189$), for "sufficient", while, "insufficient" increased to 111% ($N = 47$). Analysing the scores of the events during teaching showed that only 67% ($N = 284$), adjusted the processing of subject matter to relevant inter-student differences and subject matter and only 56% ($N = 237$), of the participants offered weaker students extra study and instruction time.

Teaching learning strategies

Teaching learning strategies of teachers were mostly not evaluated as "excellent". Of all the domains, the score of "excellent" was the lowest (99%; $N = 42$), with "good" 453% ($N = 192$), "sufficient" 406% ($N = 172$), and "insufficient" 42% ($N = 18$), Teaching practices reveal that teachers do not always teach students to find solutions to problems and to reflect back on practical strategies used in class. Evidently, cognitive and meta-cognitive strategies propagated by Borkowski, Carr, and Pressley (1987) are not always applied in class.

Engagement of students in class

The level of students' engagement in learning was rated using a four-point scale. The engagement of students in this sample measured the teaching quality of teachers, which indicated good internal consistency: 4 = 314% ($N = 133$), (excellent), 3 = 387% ($N = 164$), (good), 2 = 243% ($N = 103$), (sufficient) and 1 = 57% ($N = 24$) (insufficient). It is therefore evident that students showed high levels of engagement in class.

Teachers' personal factors and effective teaching practices

We found no violations with regard to assumptions for conducting MANOVA. Main analyses show there are no statistically significant differences with regard to the teaching subject, gender, grade level, and teaching experience on the combined dependent variables ($F_{(6, 246)\text{ teaching subject}} = 0.73$, $F_{(6, 246)\text{gender}} = 0.24$, $F_{(6, 246)\text{grade level}} = 0.46$, $F_{(6, 246)\text{teaching experience}} = 1.24$, ps > 0.05). When considering the results for the dependent variables separately, we found that teaching experience could significantly explain differences in clarity of instruction ($F_{(1, 251)} = 3.90$, $p = 0.04$, partial eta squared = 0.02) and differentiation ($F_{(1, 251)} = 3.86$, $p = 0.05$, partial eta squared = 0.02). An inspection of the mean scores indicated that inexperienced teachers performed better in clarity of instruction ($M = 3.22$, SD = 0.48) compared to experienced teachers ($M = 3.07$, SD = 0.49). Inexperienced teachers also performed better in differentiation ($M = 3.04$, SD = 0.68) compared to experienced teachers ($M = 2.84$, SD = 0.64).

Furthermore, we conducted an additional analysis to examine the trend of effective teaching practices associated with teaching experience (see Figure 1).

Figure 1 graphically shows that with regard to the level of clarity of instruction and differentiation, there is a general deteriorating trend as teachers become more experienced. Regarding the remaining teaching practices domains, a slight deterioration in teaching coincides with increasing teaching experience. The deterioration seems to be most evident with teachers with more than 15 years of experience.

Conclusions and discussion

The observations of secondary-school teachers showed that teachers scored the lowest for the domains "activating learning" and "differentiation". We revealed that teachers with more than 15 years of experience apply less effective teaching practices in their classes. This teaching experience group is consistent with teachers trained during the pre-apartheid era. The findings coincide with those of previous studies which indicate that teachers are not always willing and/or able to adjust their teaching methods to curriculum changes (Ercan 2012); are not adequately trained in how to create differentiated activities (Vandeyar and Killen 2007); do not always show positive behaviour in class (Ramsey 2000); are still using teacher-centred methods (Lekgoathi 2010), are unable to create a positive learning atmosphere (Cohen et al. 2009), and might not be motivated enough to encourage students to achieve successful learning outcomes (Anderson 2007).

Furthermore, the rationalisation process of the 1990s caused many of South Africa's best qualified and experienced teachers to resign from the teaching profession and one third of newly qualified teachers leave the country to teach in other countries. Armstrong (2009) indicated that the more capable teachers are inclined to leave the teaching profession at an early age resulting in the possibility that less capable teachers stay in the profession.

	<5 (53)	5 to 10 (61)	11 to 15 (57)	16 to 20 (29)	21 to 25 (28)	26 to 30 (18)	>30 (11)
cli	3.18	3.2	3.29	3.17	3.1	3.11	2.84
man	3.22	3.13	3.25	3.12	3.17	3.05	3.06
ins	3.22	3.16	3.11	3.15	2.9	2.9	3.05
act	3.1	3.08	3.12	3	2.9	2.84	2.7
str	3.13	3.09	3.15	3.08	2.94	2.96	2.98
dif	3.02	2.87	2.89	2.91	2.7	2.81	2.34
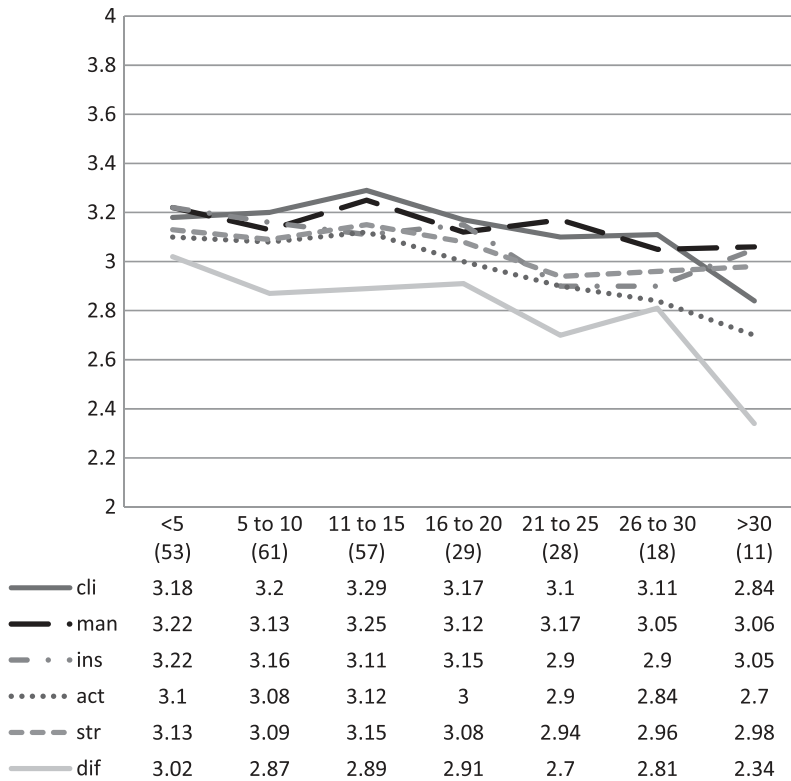
Figure 1. Teachers' experience plotted by teaching quality.

On the other hand, it is possible that the renewed teacher training programmes result in more effective teaching practices of less experienced teachers. This teacher group was trained during the post-apartheid era. The study detected that less experienced teachers demonstrated more interactive teaching skills and were mostly trained in how to create differentiated class activities. New teacher training programmes might equip beginning teachers to be more innovative in addressing adverse contextual factors that influence effective teaching practices.

It is reasonable to argue that more experienced teachers have acquired more content knowledge during their teaching experience, but may lack positive motivation to adapt to changes of the frequently revised national curriculum. Since the end of apartheid, the curriculum has changed four times. It is likely that teachers are not always sufficiently trained in how to implement these changes. Consequently, teachers would tend to teach as they were trained. In this case, they still favour teacher-centred methods over interactive teaching methods that accommodate all learning styles and needs.

It can be concluded that teachers with less than 15 years of teaching experience employ more effective teaching practices, implement the changes of the curriculum, create differentiated activities and might be more motivated to adapt to challenging contextual factors in order to teach effectively. Furthermore, as part of the digital age generation, these teachers might also be capable to apply interactive teaching methods to enhance students' engagement in class.

This study also shows some limitations. Besides the reliability and validity of the observation instrument, student achievement was not measured. The observational tool in combination with standardised tests to establish students' effective learning could add value to this study in establishing teachers' quality of teaching practices. Additionally, this study was executed on a voluntarily basis. The observed teachers are only representative of public schools in the Gauteng Province and not of public-school teachers in other provinces. Therefore, the results might not be applicable to all teaching and learning contexts in South Africa. We argue that student teachers are able to play a role as observers other options are not feasible, on the conditions that selection is based on high-quality criteria. Nevertheless, cautions in interpreting results of our study is warranted until cross-validation studies employing more common observation methods (i.e. peer or external observers) and student perceptions are available.

Notwithstanding these limitations, findings of this Gauteng teacher study are consistent with international studies showing evidence from various European (Van de Grift 2007) and American contexts (Pianta and Hamre 2009; Danielson 2013) revealing that most teachers manage less complex teaching practices (learning climate, classroom management, clear instruction) and struggle with more complex teaching practices (activation, differentiation, teaching learning strategy) (Maulana, Helms-Lorenz, and Van de Grift 2014).

This study also contributes to a better understanding of secondary-school teachers' performance in terms of effective teaching practices in the classroom and adds to a broader base of knowledge that can be used by teacher training institutions. The results can assist in the development of curricula that will enhance effective teaching practices of teachers in order to increase the quality of teaching and learning in secondary schools. The result can also be used as a baseline measure that is useful for measuring the effects of professional development programmes.

In conclusion, it was shown in this study that teachers are not sufficiently trained to implement interactive and differentiated teaching methods in secondary schools that are needed for effective teaching practices in the classroom. The next step will be to train participants in differentiated and interactive teaching methods and reevaluate the development of their effective teaching skills in a follow up research study.

Note

1. $r = 0.10$ to 0.29 = small, $r = 0.30$ to 0.49 = medium, $r = 0.50$ to 1.0 = large (Cohen 1988).

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No potential conflict of interest was reported by the authors.

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Appendix A

Country name:	Date observation (dd-mm-yyyy):
	Time observation: 0 = early morning 1 = late morning 2 = early afternoon 3 = late afternoon
Location name:	Class:
Level of education: 0 = primary education; 1 = secondary education	No of learners present:
School type: 0 = general; 1 = vocational	Name of observer:
School denomination: 0 = public; 1 = private	Subject of observer:
Gender teacher: M / F	Has the observer received training at the RUG?
Years of teaching experience teacher Observe the following teacher and student	

Noted results[1] Please circle the appropriate answer: 1 = mostly weak; 2 = more often weak than strong; 3 = more often strong than weak; 4 = mostly strong.

Observed[2] Please circle the appropriate answer: 0 = no, I have not observed this ; 1 = yes, I have observed this.

Indicator: The teacher…		Results[1]	Examples of good practice: The teacher …	Observed[2]
				0/1
Safe and stimulating learning climate	1	…shows respect for learners in his/her behaviour and language	1 2 3 4	…lets learners finish their sentences …listens to what learners have to say …does not make role stereotyping remarks	
	2	…maintains a relaxed atmosphere	1 2 3 4	…addresses learners in a positive manner …uses and stimulates humour …accepts the fact that learners make mistakes …shows compassion and empathy for all learners present	
	3	…promotes learners' self-confidence	1 2 3 4	…gives positive feedback on questions and remarks from learners …compliments learners on their work …acknowledges the contributions that learners make	
	4	…fosters mutual respect	1 2 3 4	…stimulates learners to listen to each other …intervenes when learners make fun of someone …keeps (cultural) differences and idiosyncrasies in mind …stimulates solidarity between learners …encourages learners to experience activities as group events	
Efficient organisation	5	…ensures the lesson proceeds in an orderly manner	1 2 3 4	Learners enter and settle in an orderly manner …intervenes timely and appropriately in case of disorder …safeguards the agreed rules and codes of conduct …keeps all learners involved in activities until the end of the lesson …makes sure that learners know what to do if they need help with their work and explains clearly when they can ask for help …makes sure learners know what to do when they have finished their work	
	6	…monitors to ensure learners carry out activities in the appropriate manner	1 2 3 4	…checks whether learners have understood what they have to do …provides feedback on learners' social functioning whilst carrying out a task	
	7	… provides effective classroom management	1 2 3 4	…explains clearly which materials can be used The materials for the lesson are ready for use Materials are geared at the right level and developmental stage of the learners	
	8	…uses the time for learning efficiently	1 2 3 4	… starts the lesson on time … does not waste time at the beginning, during, or at the end of the lesson …prevents any unnecessary breaks from occurring …does not keep learners waiting	
Clear and structured instructions	9	…presents and explains the subject material in a clear manner	1 2 3 4	…activates prior knowledge of learners	
	10	…gives feedback to learners	1 2 3 4	…gives staged instructions …poses questions which learners can understand …summarises the subject material from time to time …makes clear whether an answer is right or wrong …makes clear why an answer is right or wrong …gives feedback on the way in which learners have arrived at their answer	

(Continued)

Indicator: The teacher…		Results[1]	Examples of good practice: The teacher…	Observed[2]
	11	…engages all learners in the lesson	…creates learners assignments which stimulate active participation …asks questions which stimulate learners to reflect …makes sure that learners listen and/or continue working …allows for 'thinking time' after asking a question …also invites learners to participate who do not volunteer to do so	1 2 3 4
	12	…during the presentation stage, checks whether learners have understood the subject material	…ask questions which stimulate learners to reflect …checks regularly whether learners understand what the lesson is about	1 2 3 4
	13	…encourages learners to do their best	…praises learners who do their best …makes clear that all learners should do their best …expresses positive expectations about what learners are going to achieve	1 2 3 4
	14	…teaches in a well-structured manner	The lesson is built up in terms of clear stages and transitions between stages The lesson builds up logically, going from the simple to the complex Activities and assignments are connected to the materials presented during the presentation stage The lesson offers a good variety of presentation, instruction, controlled practice, free practice, and so forth.	1 2 3 4
	15	…gives a clear explanation of how to use didactic aids and how to carry out assignments	…makes sure that all learners know what to do …explains how lesson aims and assignments relate to each other …explains clearly which materials and sources can be used	1 2 3 4
Intensive and activating teaching	16	…offers activities and work forms that stimulate learners to take an active approach	…uses diverse forms of conversation and discussion …offers controlled (pre-)practice …lets learners work in groups …uses Information and Communication Technology (ICT, e.g. digiboard, beamer) …employs a variety of instruction strategies …varies assignments …varies lesson materials …uses materials and examples from daily life …asks a range of questions	1 2 3 4
	17	…stimulates the building of self-confidence in weaker leaners	…gives positive feedback on questions from weaker learners …displays positive expectations about what weaker learners have to achieve …compliments weaker learners on their work …acknowledges the contributions made by weaker learners	1 2 3 4
	18	…stimulates learners to think about solutions	…shows learners the path they can take towards a solution …teaches strategies for problem-solving and referencing …teaches learners how to consult sources and reference works …offers learners checklists for problem-solving	1 2 3 4

Category	No.	Item	Rating	Sub-items
	19	...asks questions which stimulate learners to reflect	1 2 3 4	...waits long enough to give all learners the chance to answer a question ...encourages learners to ask each other questions and explain things to each other ...asks learners to explain the different steps of their strategy ...checks regularly whether instructions have been understood ...asks questions which stimulate reflection and learner feedback ...checks regularly whether learners understand what the lesson is about
	20	...lets learners think aloud	1 2 3 4	...provides the opportunity for learners to think aloud about solutions ...asks learners to verbalise solutions
	21	...gives interactive instructions	1 2 3 4	...promotes the interaction between learners ...promotes the interaction between teacher and learners
	22	...clearly specifies the lesson aims at the start of the lesson	1 2 3 4	...informs learners at the start of the lesson about the lesson aims ...clarifies the aims of assignments and their learning purpose
Adjusting instructions and learner processing to inter-learner differences	23	...evaluates whether the lesson aims have been reached	1 2 3 4	...evaluates whether the lesson aims have been reached ...evaluates learners' performance
	24	...offers weaker learners extra study and instruction time	1 2 3 4	...gives weaker learners extra study time ...gives weaker learners extra instruction time ...gives weaker learners extra exercises/practices ...gives weaker learners pre- or post-instruction'
	25	...adjusts instructions to relevant inter-learner differences	1 2 3 4	...puts learners who need little instructions (already) to work ...gives additional instructions to small groups or individual learners ...does not simply focus on the average learner
	26	...adjusts the processing of subject matter to relevant inter-learner differences	1 2 3 4	...distinguishes between learners in terms of the length and size of assignments ...allows for flexibility in the time learners get to complete assignments ...lets some learners use additional aids and means
Teaching learning strategies	27	...teaches learners how to simplify complex problems	1 2 3 4	...teaches learners how to break down complex problems into simpler ones ...teaches learners to order complex problems
	28	...stimulates the use of control activities	1 2 3 4	...pays attention to prediction strategies for reading ...lets learners relate solutions to the context of a problem ...stimulates the application of alternative strategies
	29	...teaches learners to check solutions	1 2 3 4	...teaches learners how to estimate outcomes ...teaches learners how to predict outcomes ...teaches learners how to relate outcomes to the practical context
	30	...stimulates the application of what has been learned	1 2 3 4	...stimulates the conscious application of what has been learned in other (different) learning contexts ...explains to learners how solutions can be applied in different situations ...relates problems to previously solved problems

(Continued)

Indicator: The teacher…		Results[1]	Examples of good practice: The teacher …	Observed[2]
	31	…encourages learners to think critically	1 2 3 4	…asks learners to provide explanations for occurrences …asks learners for their opinion …asks learners to reflect on solutions or answers given …asks learners to provide examples of their own	
	32	…asks learners to reflect on practical strategies	1 2 3 4	…asks learners to explain the different steps of the strategy applied …gives an explicit explanation of possible (problem-solving) strategies …asks learners to expand on the pros and cons of different strategies	

Indicator: The learners…		Result[1]	Examples of good practice: Learners…	Observed[2] 0 1
Learner engagement	33	…are fully engaged in the lesson	1 2 3 4	…pay attention during instructions are given …participate actively in conversations and discussions …ask questions	
	34	…show that they are interested	1 2 3 4	…listen actively when instructions are being given …show their interest by asking follow-up questions …ask follow-up questions	
	35	…take an active approach to learning	1 2 3 4	…show that they take responsibility for their own learning process …work independently …take the initiative themselves …use their time efficiently	