

Critical thinking: are the ideals of OBE failing us or are we failing the ideals of OBE?

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One of the cornerstones of the Outcomes-based approach adopted by the South African education and training sector is the so-called Critical Outcomes. Included as one of these outcomes is the ability of learners to identify and solve problems, using creative and critical thinking. Underpinned by the Critical Outcomes, Outcomes-based Education (OBE) was introduced in South African schools in 1997. It can therefore be argued that the critical thinking abilities of the cohort of first-year students who entered higher education institutions in 2006 were challenged somewhere in their school careers. Based on this assumption, a group of first-year education students were required to complete the Watson Glaser Critical Thinking Appraisal (WGCTA) to gauge their critical thinking abilities. The results obtained by this means are discussed and some suggestions made to address the way forward with regard to development of learners' critical thinking abilities.

Keywords: Critical Outcomes; critical thinking; Outcomes-based Education; prospective teachers; Watson Glaser Critical Thinking Appraisal

Introduction and motivation

In South Africa, as elsewhere, the idea that education and training should help learners develop the dispositions or attitudes associated with critical thinking, as well as the ability to think well, can be connected to government policies, employers' desires and the pace of globalization. Increased economic competition demands that education and training, no matter in what discipline or at what level, should enable learners to think "smarter" than in the past (Pithers & Soden, 2000:237). To be able to survive and thrive, economic systems have to ensure that workforces consist of curious, critical, analytic and reflective thinkers — problem-solvers who are quick to learn, as well as flexible and able to add value to their organizations (*Ibid.*, 2000:238). Moreover, Barnes (2005:12) argues that we now find ourselves in a time when learners are inundated with information, but have limited skills to decipher, question, validate and reason through its substantiality or validity. Teaching for critical thinking is therefore a necessity.

In response to this, recent reforms of the South African educational system were characterized by the ideals that the country needs to produce independent, critical thinkers who are able to question, weigh evidence, make informed judgements and accept the incomplete nature of knowledge (Republic of South Africa (RSA), 1995:22). This resulted in notions such as *lifelong learning*, *learner-centredness* and *process-oriented learning*, which have now

become part of colloquial language in South African.

Underpinned by Spady's (1994) philosophy of OBE, South Africa has developed its own OBE model. Fundamental to this model are the so-called Critical Cross-field Outcomes. These outcomes, which are generic in nature, are subdivided into seven critical and five developmental outcomes. An analysis of these outcomes reveals that cultivation of cognitive capacity has prominence. Phrases such as "*to critically evaluate information*", "*to use science and technology effectively and critically*", "*to solve problems*" (South African Qualifications Authority (SAQA), 1997:7) are no exception. More particularly, one of the Critical Outcomes suggests that learners should be able to "*identify and solve problems and make decisions using critical and creative thinking*" (Department of Education (DoE), 2002:12).

To ensure that these Critical Outcomes do not remain mere visionary benchmarks, attempts were made to operationalize them within the South African school system by means of an Outcomes-based curriculum. As a result, an OBE curriculum was introduced in schools from 1998 — initially by means of Curriculum 2005 (C2005), which was followed by the Revised National Curriculum Statement (RNCS) and by the National Curriculum Statement (NCS). Therefore, for almost ten years now, Critical Outcomes have been embedded in the formal curriculum activities in South African schools. Viewed from the perspective of teacher competence, it can be assumed that during this period implementation of OBE has affected teachers' teaching practice. From a historical perspective, it can furthermore be argued that learners, who enrolled at institutions of higher learning for the first time during 2006, were either directly (by being exposed in one way or another to C2005) or indirectly (in their teachers' teaching practice) influenced by OBE. If one or both of these assumptions is correct, then it would be important to establish to what extent the ideals inherent to the Critical Outcomes were realized (or are in the process of being realized) during the school careers of first-year students.

Purpose statement

Derived from the above and based on the premise that teacher education is a key factor in enhancing learners' critical thinking abilities, our purpose in this research was to establish the critical thinking abilities of first year education students in an attempt to determine whether the OBE ideal of critical thinking had been realized in these students during their school careers.

Critical thinking: an overview

According to Browne and Meuti (1999:162), "critical thinking is perhaps the most oft-cited learning objective", while Halx and Reybold (2005:293) maintain that critical thinking has become the "mantra of higher education ... it is assumed a desirable goal — if not the principal goal". Barnes (2005:6) asserts that more than many other educational innovations, critical thinking has not only persisted, but has also inserted itself into the fabric and fibre of (educa-

tional) missions and practices. Kong and Seng (2006) are of the opinion that of all the kinds of thinking one can possibly identify, none has drawn greater attention from the educational community than critical thinking. Notwithstanding the fact that the notion of critical thinking has become of paramount importance among educators (Bataineh & Zghoul, 2006:33) and although it lies at the core of South Africa's Critical Outcomes, a literature review confirms Atkinson's (1997) and Ennis's (1992) observations that the concept is still vaguely defined. Moreover, it appears as if different persons attach different meanings in different circumstances to the concept. This gives rise to Atkinson's (1997) opinion that critical thinking is a socially constructed concept, which entails a covert social practice, rather than a well-defined and teachable set of pedagogical behaviours. McPeck (1981:8), for example, defines critical thinking as "a propensity and skill to engage in an activity with reflective scepticism". In turn, Paul (1993:33) suggests that it entails "disciplined self-directed thinking which exemplifies the perfections of thinking appropriate to a particular mode or domain of thinking". According to Daniels (1998:1), "critical thinking often requires imagining possible consequences, generating original approaches or identifying alternative perspectives. Thus, virtually any form of human practice can involve critical thinking". Bailin, Case, Coombs and Daniels (1999:289) characterize critical thinking as "responsible assessment of reasons and arguments" along with "responsible deliberation". Pithers and Soden (2000:239) refer to Ennis (1992) and Perkins, Jay and Tishman (1993) when concurring that critical thinking should be understood in terms of abilities and dispositions. Abilities include: identifying a problem and its associated assumptions; clarifying and focusing the problem; analysing, understanding and making use of inferences; inductive and deductive logic, and judging the validity and reliability of assumptions, sources of data or information available. Evaluation is seen as a key ability. Distinguishable dispositions or attitudes include: a "spirit of inquiry", "open-mindedness", "drawing unwarranted assumptions cautiously" and "weighing the credibility of evidence".

Halpern (2002:6) describes critical thinking as "cognitive skills and strategies that increase the likelihood of a desired outcome ... thinking that is purposeful, reasoned, and goal-directed — the kind of thinking involved in solving problems, formulating inferences, calculating likelihoods, and making decisions". For Tsui (2002:748), critical thinking means to "assess and scrutinize 'knowledge' prior to its consumption". After having studied a diverse number of definitions, Vandermensbrugge (2004:417) concludes that existing definitions of critical thinking can broadly be divided into two categories. The first category refers to the ability to develop a capacity to reason logically and cohesively, whereas the second category refers to the ability to question and challenge existing knowledge and the social order. While Halx and Reybold (2005:296) briefly state that one applies critical thinking when simple opinion is transformed into well-reasoned thought, they also remark that although the literature provides a wide range of definitions to describe critical thinking, the

descriptors: purposeful, reasoned, and goal directed thinking, appear consistently. In acknowledging its complexity, Kong and Seng (2006) simply define it as a “multi-dimensional cognitive ability”, while Barnes (2005:6) argues that critical thinking is best described in analysing its Greek root *kritikos*, which means ‘to question’.

Describing critical thinking as a “normative enterprise” (285), Bailin *et al.* (1999:290-295) provide a concise though elucidative explanation of what characterizes a critical thinker. By paying attention to both abilities and dispositions, they argue that a critical thinker applies five kinds of intellectual resources: background knowledge, operational knowledge of the standards of good thinking, knowledge of key critical concepts, heuristics, and habits of mind. Background knowledge includes the depth of knowledge, understanding and experience a person is able to demonstrate in a particular area, which determines the degree to which such a person is capable of thinking critically in that area. Operational knowledge of the standards of good thinking and assessment are implicit in critical thinking practices. Standards that a critical thinker must learn to use include rules of logic, standards of practical deliberation, standards of argumentation, standards used in developing plans of action and standards governing inquiry and justification in specialized areas. Standards comprise two kinds: standards that are relevant to judging intellectual products and principles relevant to guide practices of deliberation or inquiry. A critical thinker must also have knowledge of key critical concepts to be able to distinguish between different kinds of intellectual products. Acquiring critical concepts is not essentially a matter of acquiring new terminology; it is rather a matter of learning to make appropriate distinctions. A fourth intellectual resource is heuristics. Human beings have discovered or devised strategies, procedures or heuristics for guiding performance in a variety of thinking tasks, e.g. double-checking something before it is accepted as fact or dividing a problem into a series of sub-problems more amenable to solutions. Having the intellectual resources necessary for critical thinking does not, by itself, make one a critical thinker. One must also have certain commitments, attitudes or habits of mind that dispose one to use these resources to fulfil relevant standards and principles of good thinking. These habits of mind include: respect for reasons and truth, open-mindedness, fair-mindedness, independent-mindedness, respect for others in group inquiry and deliberation, respect for legitimate intellectual authority, and an intellectual work-ethic.

Since it was our intention to apply the Watson Glaser Critical Thinking Appraisal (WGCTA)(Watson & Glaser, 2002a) to determine the critical thinking abilities of first-year education students, the definition proposed by the authors will be used for the purposes of this article. Critical thinking is viewed by Watson and Glaser (2002b:7.1) as

a composite of attitudes, knowledge and skills. This composite includes:
(1) attitudes of enquiry that involve an ability to recognize the existence of problems and an acceptance of the general need for evidence in support

of what is asserted to be true; (2) knowledge of the nature of valid inferences, abstractions and generalizations in which the weight or accuracy of different kinds of evidence is logically determined; and (3) skills in employing and applying the above attitudes and knowledge.

Nature of the research

Background

The purpose of the empirical research was dualistic in nature. First it should be viewed as explorative. Second, it should be seen as a follow-up pilot study (by the same authors) in which the Cornell Critical Thinking Test — Level Z was used to measure the critical thinking abilities of another group of first-year education students (*cf.* Lombard & Grosser, 2004). Both pilot studies intended focusing on one of the key educational elements of the African Renaissance, namely, elevation of learners to the highest level of human development. Parallel to this, the Critical Cross-field Outcomes of SAQA, of which the ability to think critically forms part, should be considered. Therefore, the research, on which we report, purports to confirm and strengthen the test results of the first pilot study and is positioned to set the foundation for an intended comprehensive research project on critical thinking which will also involve students at other Higher Education institutions in South Africa.

Limitations

The authors agree that the study, in its present form, has a few limitations. Although the WGCTA covers topics which are culturally neutral and familiar, we acknowledge the fact that a test instrument specifically constructed for South African conditions and students would be the ideal. Furthermore, the two pilot studies focused on small groups of students which limit the generalizability of the results. The proposed extended research project will address this issue. As a variety of norm groups have been established for students, in other countries and at different levels, to whom the WGCTA has been administered, the extended research project will open up the possibility of the researchers establishing a norm group for South African students against which future test performances with South African students could be compared.

Research design

To contextualize the research, information on the topics of critical thinking and its pivotal role in educational change pertaining to South Africa was gathered by means of a brief literature overview. However, the research focused primarily on measuring the critical thinking abilities of a particular group of research participants. By applying the WGCTA for this purpose, the empirical part of the research was approached from a quantitative perspective, using inferential statistics.

Sample

For reasons mentioned above, it was decided that first-year education students should participate in the project. Because of considerations, such as the exploratory nature of the research and financial and time constraints, non-probability sampling in the form of convenience sampling was applied in selecting the research participants. According to Cohen and Manion (1994: 88), this type of sampling is often used when dealing with captive audiences, which in this case happened to be first-year education students. Eventually a heterogeneous group of 117 first-year education students enrolled for a BE degree, at one university campus, participated in the research.

Selecting the research instrument

Ennis (1984:3; 7) and Bataineh and Zghoul (2006:37) refer to various norm-referenced measuring instruments for assessing respondents' critical thinking abilities. Among others, they mention the Cornell Critical Thinking Test — Level Z and the Watson Glaser Critical Thinking Appraisal. The first instrument had been used previously by the researchers (*cf.* Lombard & Grosser, 2004) but despite the recommendation that "... contextualised and standardised research instruments appropriate to South African circumstances be developed to establish the critical thinking abilities of the South African society ..." (Lombard & Grosser, 2004:215), no such instruments tailor-made for the South African population are as yet available. It was therefore decided to administer the WGCTA for the purposes of this research. Researchers in the field of critical thinking, who are familiar with the WGCTA, give the instrument a high rating.

Fisher and Scriven (1997) express their opinion as "... it (the WGCTA) is probably the most widely used measure of critical thinking in the world". Some reasons related to the high quality of the instrument are ascribed to the following factors (Watson & Glaser, 2002b):

- It has a development and refinement history of at least 50 years.
- It is a widely evaluated and standardized test.
- It measures critical thinking by means of practical issues in original settings.
- It has succeeded in incorporating all theoretical aspects of critical thinking such as: defining problems, selecting information for solving problems, recognizing stated and unstated assumptions, formulating and selecting hypotheses, drawing conclusions and judging the validity of inferences.
- It has been reviewed on several occasions to increase its clarity, to update its word usage and to eliminate stereotypes.
- It is known for its enduring quality, technical robustness and high performance characteristics.
- It has been translated into several languages other than English.

Additional considerations for selecting the WGCTA include that the instrument is designed to determine critical thinking abilities by using "general

scenarios". The content of the test covers topics that would elucidate strong feelings or prejudices which are culturally neutral and familiar (Watson & Glaser, 2002b:2.2). It is also not subject-related and needs no pre-knowledge. Furthermore, it is argued that the degree of foreignness to the South African situation could be regarded as minimal, whereas the cognitive processes needed for completion of the test correlate with those expected in the execution of academic tasks at university. Moreover, with regard to the latter, the developers claim that the WGCTA is appropriate to being taken by participants who have completed a basic formal education, which was true of all the research participants since all of them had managed to complete their school careers successfully. As the developers indicated that sections of the test, where the reading ability exceeded a reading level of 15 years, had been either modified or eliminated, it was cautiously assumed that the research participants complied with the minimum reading ability of 15 years.

Since the standard English style of South Africans relates closely to British English, the adapted United Kingdom version of the instrument (WGCTA-UK) was considered to be the most appropriate. The compulsory language proficiency test taken by students on admission to the university revealed that the students were capable of continuing their studies in English and supported this decision.

Description of the research instrument

The WGCTA-UK consists of five subtests to measure different, though interdependent, aspects of critical thinking. Respondents have to study each statement and then determine the appropriateness and the validity of propositions. These five subtests focus on:

- drawing inferences, in which respondents have to evaluate inferences drawn from a series of factual statements;
- recognizing assumptions, where respondents are required to identify unstated assumptions in a series of statements;
- deduction, where respondents have to determine whether certain conclusions necessarily follow from information in given statements;
- interpretations, where evidence is weighted to decide if generalizations based on data are warranted; and evaluation of arguments, where respondents are required to distinguish between strong, relevant arguments and weak irrelevant arguments.

There are 80 test items; 16 items per subtest. The test items include two kinds of content: neutral topics and controversial issues. The first include matters on which people generally do not have strong feelings, such as the weather or scientific facts. Controversial issues deal with matters such as political or social matters on which people have definite emotional feelings. The inclusion of the latter kind of content is motivated by the indication that critical thinking is affected by emotions (Watson & Glaser, 2002b:2.2).

Its developers conceptualized the instrument as a test of power rather than a test of speed. The time for administering the test is indicated to be 60

minutes: 50 minutes for completion by respondents and between 5 and 10 minutes for dealing with administrative matters.

Reliability and validity of the research instrument

Although the processes of establishing the reliability and validity of the instrument appear to be sound and comprehensive procedures (Watson & Glaser, 2002b:chapters 8-9), reliability and validity were also confirmed for local circumstances.

The test results for the group of students revealed a split-half reliability coefficient of 0.566515 and a Guttman split-half reliability coefficient of 0.566471. According to the resident Statistical Consultation Services, this was an acceptable measure for concluding that the instrument complied with reliability criteria. Regarding validity, the following aspects were considered:

- **Face validity.** The WGCTA-UK contains relevant content which falls in the scope of rapport. The operations and processes required represent abilities that are valued and readily appreciated as relevant to critical thinking.
- **Content validity.** The content validity of the instrument is supported by the fact that the specific test items were constructed strictly according to the definition of each section. The test measures the capabilities and objectives that underpin the academic instructional programme of the students involved in the study.
- **Construct validity.** The construct validity of the WGCTA-UK is underpinned by the fact that although the test focuses on different sections they all deal with the domain of critical thinking skills. Compared to the literature review regarding what constitutes critical thinking and the Cornell Critical Thinking Test — Level Z, there is a high degree of correspondence between what the literature reveals and the different sections of the two instruments. It therefore appears that the WGCTA is a good measure of the theoretical construct “critical thinking”.
- **Criterion validity.** The test has already been used to predict a variety of criteria such as course grades, degree attainment and academic performance.

Scoring of test results

After completion of the test, it can be scored manually or by computer. In this particular instance, the scoring was done manually by using the acetate-scoring key (Watson & Glaser, 2002b:4.1). For purposes of reliability, it is stipulated that the test administrator should attend to the following matters (*cf.* Watson & Glaser, 2002b:chapter 4):

- detect and calculate multiple responses, partly erased answers and missed items on each answer sheet;
- obtain the raw score on each answer sheet;
- transform raw scores to T scores; and
- identify appropriate norm groups for a comparison of scores.

Concerning identifying a norm group, a local norm group is preferred (Watson

& Glaser, 2002b:4.3). In the absence of a local norm group, a pre-existing group identified in the development and refinement of the instrument may be used. However, such a norm group should be selected from a group most closely resembling the profile of the respondent group. Furthermore, caution should be exercised when the scores of the test group are compared and interpreted.

Research results

Overall results

After administering the WGCTA to the 117 first-year education students on the selected university campus, the sample obtained a total raw score of 5255. Converted to a T score, the total came to 4004. The mean calculated from this T score was 34.2.

Because the test had not previously been administered in the South African context for the purpose of establishing a norm group, the mean score of the sample was compared with two pre-existing norm groups which, in the opinion of the researchers, resembled the profile of the sample. The first norm group was of American pre-service student teachers and the second norm group was of American Grade 12 high school learners. From the list of pre-existing norm groups provided by the developers of the WGCTA, it was assumed that the South African sample of first-year education students, although coming from a different context, could fit in somewhere between these two groups. A comparison between the sample's mean score of 34.2 and those of the two pre-existing selected norm groups revealed a rather disturbing picture. Norm group one, which represented the American pre-service student teachers, produced a mean score of 45.7, while the second norm group of American Grade 12 high school learners obtained a mean score of 39.5. The overall research results are presented in Table 1.

Table 1 Overall research results

N	Raw score	T score	Mean	Mean Norm 1	Mean Norm 2
117	5 255	4 004	34.2	45.7	39.5

The mean T score for the nine students in the research group whose Home Language was English indicated that they had performed better than the rest of their peers, but when compared to the two norm groups the results indicated in Table 2 were revealed.

A significant difference between the test results of norm group 1 and the research participants with English as Home Language was calculated, on the 0.05 and 0.01 levels, in favour of the norm group. With regard to norm group 2, no significant difference between the test results of the two groups was revealed. These results are reflected in Table 3.

Table 2 Results for students with English as Home Language (Total T score = 368)

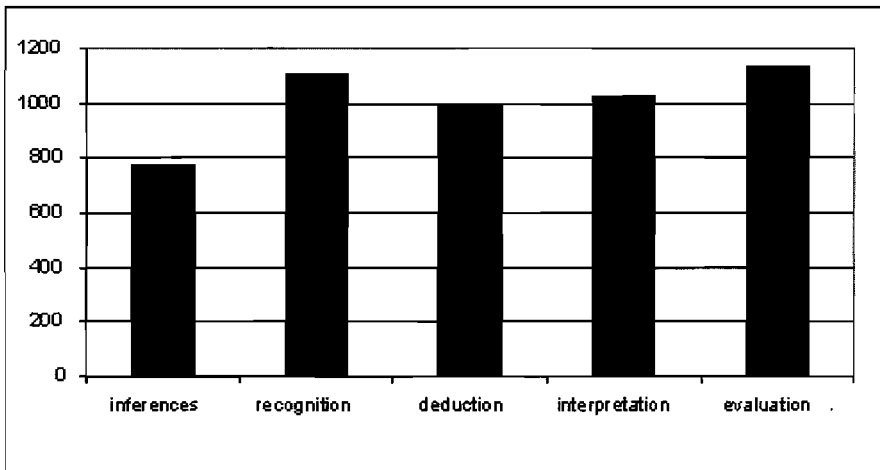
Group	Mean T Score	Difference
Students with English Home Language	40.8	
Norm group Pre-service teachers	45.7	4.9
Norm group Grade 12	39.5	1.3

Table 3 Significant differences of test results for learners with English as Home Language compared with norm groups

Norm group	<i>t</i>	<i>p</i>
Norm group 1	6.622	0.05; 0.01
Norm group 2	5.5220	

Subtest results

From the raw scores obtained in the five subtests, the sample's results are represented on the graph in Figure 1.

**Figure 1** Raw scores obtained in subtests

The raw scores of the five subtests obtained by the research participants indicated close relationships between the five sets of results. It was therefore required to establish the significance of the differences between the subtest results. Table 4 reflects these differences.

Table 4 Significance of differences between the five subtests

	Test 1	Test 2	Test 3	Test 4	Test 5
Total	771	1102	997	1029	1134
Average	6.5897	9.4188	8.5214	8.7948	9.6923
Standard deviation	2.2635	2.6595	1.8504	2.0948	2.9403
Test 1					
t value		8.7623	7.1466	7.7337	9.0439
p value		2E-14	8E-11	4.19E-12	4.1E-15
Test 2					
t value	8.7623		2.9961	1.5934	0.7461
p value	2E-14		0.0033	0.04855	0.4570
Test 3					
t value	7.1466	2.9961		1.05841	3.5081
p value	8E-11	0.0033		0.2920	0.0006
Test 4					
t value	7.7338	1.9935	1.0584		3.2765
p value	4E-12	0.0486	0.2921		0.0013
Test 5					
t value	9.044	0.7462	3.5082	3.2765	
p value	4E-15	0.4571	0.0006	0.0013	

A significant difference between subtest 1 (inferences) and the rest of the subtests is evident. Other significant differences (although minor in comparison to the aforementioned) were also observed between:

- subtests two and three (recognition of assumptions and deduction);
- subtests two and four (recognition of assumptions and interpretation);
- subtests three and five (recognition of assumptions and evaluation of arguments); and
- subtests four and five (interpretation and evaluation of arguments).

It was remarkable that no significant differences were observed between subtest three (deduction) and subtest four (interpretation), or between subtest two (recognition of assumptions) and subtest five (evaluation of arguments).

Interpretation of results

Our primary focus in this research was to establish the critical thinking abilities of a group of first-year education students in order to determine whether this OBE ideal was realized during their school careers. Secondary to this, and implied in the title of this article, the results of the empirical research necessitate reflection on the possible causes for the deficient critical thinking abilities among the research participants.

Related to such possible causes, cognizance should also be taken of latent factors that may affect the interpretation of the test results. Such latent factors could include test difficulty, complicated language usage or potentially unfamiliar test content. In addition, they may also include the fact that no local instruments for measuring critical thinking exist; that no local norm groups have been established to which South African test results could be related, and the unavailability of verifiable data concerning the participants' English language competence. All the aforementioned presuppose that the interpretation of the test results obtained by South African respondents in the WGCTA-UK should be done with caution.

Whereas all the mentioned latent factors were considered in interpreting the research results, Norris (1985:40) reminds us that systematic research suggests that most high school and college students do not perform extremely well in the kinds of tasks that are used to indicate critical thinking competence, and that adults fare no better. To substantiate his claim that the ability to think critically is not widespread, Norris (1985:44) maintains, "... most students do not score well on tests that measure ability to recognize assumptions, evaluate arguments, and appraise inferences".

Whatever the case may be, the focus of this research revealed very little evidence pertaining to the development of the research participants' critical thinking abilities at school level. In an attempt to provide a synoptic explanation for the deficient critical thinking abilities among the research participants, the following possible causes (which justify further exploration) are highlighted: teachers' teaching practice, educational change, the socio-cultural environment, and language ability.

Teachers' teaching practice

One of the main goals, of the educational system nowadays, is the emphasis on the development and improvement of, and instruction in, critical thinking skills (Gyalym & Le Grange, 2005:25), and on better or more classroom interaction to promote learners' critical thinking skills (Jacobs & Gawe, 1998: 201). Both national and international studies have identified teaching strategies and methods as important factors in nurturing critical thinking abilities (Collins & Mangieri, 1992:176; Sonn, 2000:259; Schraw & Olafson, 2003:178-239). However, much of today's classroom learning is focused on activities by which the learner acquires facts, rules and action sequences, and the majority of lessons require outcomes only at the lower levels of cognition: knowledge, comprehension and application (Sonn, 2000:257-265). Beye (cited by Borich, 2004) suggests that the manner in which most present day schooling occurs may not be teaching learners to become aware of their own learning, to think critically and to derive their own patterns of thought and meaning from the content presented. This is supported by Potterton (2008:15) who states that "to a large extent teachers have adopted the new curriculum's ideas through patterns of the past. They simply use whole-class teaching approaches with different content". In this connection, Espeland and Shanta (2001) maintain that when teacher-centred approaches enjoy preference, it may deprive lear-

ners of critical and creative thinking opportunities. This may explain why national and international studies (Clough, Clough & Nixon, 1989:7; Goodlad, 1984; McPeck, 1990:42; Schlechty, 1991:40; Engelbrecht, 1995:11-12; Sonn, 2000:259) found that many learners are unable to think independently of the teacher or to go beyond the content in their texts and workbooks. A summary of the research done by the above authors reveals the following problems:

- Teachers dominate classroom interaction and too much time is devoted to instruction;
- teachers are likely to teach in the way they themselves were taught;
- teachers place very little focus on the construction of knowledge and thinking skills;
- teachers lack cognitive skills and are not sure how to teach thinking strategies or how to evaluate them;
- teachers emphasize the assimilation and recall of knowledge and learning is measured against learners' competence to reproduce facts;
- teachers' intuitive knowledge of meta-cognition of thinking skills is unsatisfactory for the purpose of teaching higher-order thinking in classrooms;
- teachers are not applying much declarative meta-cognitive knowledge of thinking skills during the process of designing learning activities;
- teachers who teach higher-order thinking do so on an intuitive basis, not being aware of the fact that they were actually engaged in the teaching of such thinking;
- teachers may be proficient in solving problems requiring procedural knowledge of some thinking skills, but the majority are not able to verbalize the thinking patterns that they used during their problem-solving;
- teachers confuse critical thinking with active involvement in learning;
- curricula are not designed in such a manner that cognitive development is structured; and
- prospective teachers have an apparent inability to handle tasks requiring critical thinking abilities, including deduction, semantics, credibility, induction, definition and assumptions.

From the above it is clear that critical thinking skills, as well as an understanding of how to teach these skills, are lacking among prospective and practising teachers. It could therefore be concluded that despite a supposedly learner-centred curriculum, research participants were not taught by teachers who infused critical thinking into their daily lessons. This could possibly be attributed to the continuous use of teacher-centred, non-critical teaching approaches (Potterton, 2008:15).

Educational change

Potterton (2008:15) argues for being fair to teachers when indicating that curriculum change (and consequently changes in teaching practice) were not the only changes expected to be implemented in schools. A myriad of new policies and regulations that teachers had to come to grips with, large classes and the strong hold of traditional practices on teachers contribute to the fact that the curriculum is not always successfully translated in the classroom. Further-

more, the demands made by educational changes, including the new curriculum, on teachers' time, energies and attention shifted and there was not enough focus on new instructional practice (Potterton, 2008:15). According to Potterton (2008:15), the new curriculum resulted in too many unfulfilled promises for far too many young people.

The socio-cultural environment

A major factor contributing to deficient critical thinking abilities can be connected to the mediation of social experience within the socio-cultural environment in which a learner grows up. According to Ayisi (1992:1), culture is "... that complex whole which includes knowledge, belief, art, law, morals, cultural tools, customs, and all other capabilities and habits acquired by man as a member of society". The role of mediating social experience in cognitive development and growth considers in its direct form people interacting with and supporting one another (Gauvain, 2001b:127). In other words, how parents, teachers, other adults, siblings and peers influence children's cognitive development (Gauvain, 2001a:x). In its indirect form the role of social experience considers the tools, symbols and values that influence human action (Gauvain, 2001b:127). Cultures have developed many types of tools to support the daily activities of people — labour-saving devices, sign and symbol systems, street signs, price tags, product labels, recipes, patterns for dress-making, etc. Gradually these tools become part of children's own actions. These tools not only enhance human thinking, but also transform it (Gauvain, 2001b:127).

Perspectives that only concentrate on internal processes of cognitive development (growth and age-related factors) and ignore external processes (socio-cultural environment) and the interaction of the two cannot give a complete account of the emergence of human intellect (Gauvain, 2001a:xiv). To understand cognitive development across time it needs to be viewed wider than just determined by biological and maturational capabilities. It must be seen deeply embedded in a social world of occasions, formalities, etiquettes and dramaturgy (Gauvain, 2001a:17).

It can therefore be argued that socio-cultural environments do not always prepare students for the execution of critical thinking abilities. It is only when cognitive growth is supported by intentional and directed mediated and modelled efforts that cognitive growth is not stunted.

Language ability

According to Paul (2004:463), critical thinking is the intellectually disciplined process of actively and skillfully conceptualizing, applying, analysing, synthesizing and/or evaluating information gathered from or generated by observation, experience, reflection, reasoning or communication, as a guide to belief and action. To accomplish these critical thinking actions good language ability is crucial. Donald, Lazarus and Lolwana (2002:19), as well as McPeck (1990:34), assert that language, thinking and therefore learning are intimately tied

together and that the capacity to use language is essential to execute critical thinking.

Chaffee (1985:245) states that when our use of language is sloppy — that is vague, general, indistinct, imprecise, foolish, inaccurate and so on — it leads to thinking of the same sort. The “sloppiness” in language use that Chaffee refers to is very evident in students’ written and verbal arguments. In most instances when the question, instruction or discussion topic requires critical thinking, mere facts are reported in a parrot-like or telegraph style and concepts are not clearly argued and explained. This parrot-like reporting is also apparent when critical reading is required. Elder and Paul (2004:36) affirm that the typical university student cannot deeply comprehend what he or she reads. This problem is more noticeable with students receiving teaching in their second language. In order to stimulate critical thinking there has to be a willingness to experiment with ideas and thoughts and to explore knowledge through language interaction (Mills & Mills as quoted by Donald *et al.*, 2002:220). A limited proficiency in a language hinders active communication which may result in a passive process of information-giving and rote learning, since it is linguistically easier to handle (Donald *et al.*, 2002:220).

The research results could imply that the particular group of students do not adequately meet the language requirements necessary for thinking critically.

The way forward

The research field of critical thinking is extensive. Establishing the critical thinking abilities of a specific research sample is therefore not sufficient. However, measuring the critical thinking abilities of a group of research participants could indicate certain shortcomings in the field and could assist in identifying factors needed for cultivating these abilities, especially when considered within a certain context. The results point, *inter alia*, to the need to inform teachers about the importance of developing their learners’ critical thinking skills. Hayes and Alvermann (1986), Robinson (1987) and Sorial (1997) point out that training teachers to teach thinking skills leads to improved learner achievement. Paul (1995:3) maintains: “The student who asks probing questions, who seeks to figure out the logic of things, who examines assumptions, analyses concepts, scrutinizes evidence, tests implications and consequences, has always had an enormous advantage over the learner who memorizes bits and pieces of information”. In addition, Pithers and Soden (2000:240) mention that teachers also need to be informed and trained on matters such as the following:

- breaking the habit of focusing more on subject matter content (although not underscoring the importance thereof) when teaching, rather than on the development of critical thinking;
- clarification on the notion of critical thinking because teachers are not exactly clear on what they need to help learners with; and
- teaching approaches and, consequently, assessment practices appropriate for cultivating critical thinking.

In the light of the above and based on the research results, it is perhaps appropriate to remind ourselves that "... critical thinking is an educational ideal ... it is not an educational option ... (learners) have the moral right to be taught how to think critically" (Norris, 1985:44). This ideal correlates with the Critical Outcomes mentioned at the beginning of this article, which in essence, provide for the progressive, realistic and reasonable benchmarks to ensure our society's development and growth. However, there are a myriad of factors that can contribute to the failure of achieving the Critical Outcomes, and in particular to the nurturing of critical thinking. Kong and Seng (2006), for example, emphasize the role of teachers in realizing the ideal of critical thinking when asserting: "If students have the moral right to be taught critical thinking skills, then teachers have the moral responsibility to prepare themselves (to guide learners to think critically)". In corroboration, Bateineh and Zghoul (2006:46) maintain that, in the advent of humanistic, learner-centred approaches to teaching, the promotion of critical thinking has become doubly important. Pre- and in-service teachers therefore need assistance to help their learners to develop the critical thinking skills necessary to function competently in today's society. According to Kurfiss (1988), critical thinking should be an integral part of any teaching endeavour. In an attempt to address the teachers' role in cultivating critical thinking, some suggestions emanating from the literature will be highlighted.

Although research by Bateineh and Zghoul (2006:33) suggests that critical thinking is not typically an intrinsic part of instruction at any level, teachers are obliged to integrate it systematically into their instruction, otherwise learning will remain transitory and superficial. Furthermore, a number of researchers (*cf.* Brown, 1984; Hayes & Alvermann, 1986) claim that the classroom environment must provide opportunities for modelling, rehearsal and coaching. Tsui (1999) found that the development of critical thinking is positively associated with substantive writing, critical discussion, class presentations, learner-led inquiry and engagement in critical dialogue between learners and teachers and among learners. A great deal of research has also shown that incorporating critical thinking concepts and teaching tactics into the curriculum is the best strategy to improve learners' ability to think critically (Bonnett, 1995; Frederiksen, 1984).

Teachers therefore need to be guided on how to infuse critical thinking into their daily lessons; be able to model good critical thinking practices and create activities that foster critical thinking in their learners (Kurfiss, 1988). Ideally speaking, teachers should be critical thinkers themselves in order to enable their learners to think critically. Since there is consensus that learners' critical thinking capacities can be improved through instruction and practice (Bateineh & Zghoul, 2006:37), the answer to the question posed in the title seems obvious. The ideals of OBE are not failing us, but if teachers neglect to incorporate the cultivation of critical thinking in their teaching practice, they stand to be accused by the question: "Are we failing the ideals of OBE?"

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