

Using Mentees' Feedback to Improve a Mentoring Program in a South African Medical School

M. Mammen

*Faculty of Health Sciences, Walter Sisulu University, Nelson Mandela Drive, P/Bag X1, Unitra-5117, Mthatha, Eastern Cape Province, South Africa
Tel: +27-822021150 (Mobile); 047-5022503, E-mail: mmammen@wsu.ac.za*

KEYWORDS Mentoring. Problem Based Learning. Medical School. Self-directed Learning. Feedback

ABSTRACT This was a survey aimed at exploring whether a student-mentor training which was modified through mentee-feedback caused significant differences on mentees' views on student-mentor attributes. Two questionnaire surveys, one each at the end of two successive years' mentoring programs were administered to gather the views of two cohorts of MBChB first year mentees on some selected quality attributes of their senior student-mentors. The first set of data served as feedback to improve student-mentor training. The comparison and contrast between the first and second sets served to evaluate the effectiveness of the modified student-mentor training. The results on mentees' views showed statistically significant improvements on some attributes such as mentor initiative to meet mentees, mentor-availability, mentor-honouring of appointments, mentor-mentee relationship and mentor-commitment to mentees. Although 100% overall mentee satisfaction remains as the mentoring program's target, 91% and 98% of mentees were satisfied in 2008 and 2009 respectively despite no significant statistical difference on some other student-mentor attributes. The study concluded that interventions based on the feedback from the 2008 views made noticeable improvements on the mentees' views on student-mentor attributes in 2009. Continuously improved student-mentor training may be useful for all new university student-entrants, especially those from disadvantaged social and academic backgrounds, but that cannot be generalized from these results from one medical school. Further research on improving mentoring programs based on continuous feedback and review of student-mentor training across higher education institutions is recommended to facilitate additional insights to improve student mentoring programs in general, and those for new medical students from disadvantaged backgrounds in particular.

INTRODUCTION

Mentoring programs have been in operation in many nations, in one context or another and in a variety of organizations including institutions of higher education. Examples for the above can be seen in research outputs on mentoring, for example, in Canada (Poldre 1994), in New Zealand (Parker-Redmont 1990), in Zimbabwe (Maphosa et al. 2007), in U.S.A (Campbell and Campbell 1997; Penner 2001), in South Africa (Kagee et al. 1997; Blunt and Conolly 2006). There are also many research papers on mentoring in health education. For example: Poldre (1997), Aagaard and Hauer (2003), Gibbs et al. (2005) and Straus et al. (2009).

This paper reports on student-mentees' views on attributes of their student-mentors gathered through two questionnaire surveys in successive years. The mentees were undergraduate first year medical degree (MBChB) students at one of the eight public medical schools in South Africa. In order to comply with anonymity, this medical school will be referred to as 'A' throughout this paper.

Mentoring Programs and Definitions

It appears to be common knowledge that the term *mentor* stems from Greek mythology in which Odysseus entrusted the care and education of his child to a friend named Mentor while he, the father, was away on his adventures and travels. The synonyms of mentoring include role model, coach, guide, sponsor, friend, and advisor (Penner 2001). Collation of observations by Parker-Redmont (1990), Chweu and Schultz (2010) and Schulze's (2010) indicates that mentoring has, amongst others, many components: the transference of knowledge and skills to cope with mentees' responsibilities and creation of a relationship which ensures that the transference is successful; coaching and exposure through providing networking skills, training and providing relevant information; mentors' accessibility and service as intentional role models; provision of academic and social support to mentees, affirmation of mentees' worth and self-esteem, and trust development between mentors and mentees. Mentoring shares some common characteristics with peer-assisted learning, PAL (Saunders and

Gibbon 1998; Tariq 2005). Topping (1998) captures the gist of PAL as the acquisition of knowledge and skill through active helping and supporting among status equals or matched companions. According to Tariq (2005), both PAL and mentoring boosted self-confidence, problem-solving and numerical skills in first-year undergraduate bioscience students. Page et al. (2005) observe that mentoring at a South African University not only served the student who was most at risk of failing but also enhanced the level of achievement of gifted students, many of whom were traditionally underachievers.

Despite the presence of several definitions for mentoring in the literature, some common elements emerge such as: the institutional need; social setting; the kind of mentor program offered; and mentor-mentee relationship, the roles of mentees and mentors. For example, Biehl (1996) defines mentoring as a lifelong relationship in which a mentor helps a mentee to reach her or his God-given potential. However, in contrast with Biehl's view of lifelong relationship, Chweu and Schultz (2010) by citing Hung (2003), point out that mentoring ought not to continue indefinitely, but the mentee ought to move forward without the assistance of the mentor, once the mentor-mentee relationship ends. In a more recent attempt, Schulz (2010: 782) cites Steinmann's (2006) definition, "Mentoring is defined as a dynamic, shared personal relationship in which a more experienced person acts as an advisor, guide and role model for someone who has less experience in a particular field, the mentee." The definition of mentoring at 'A' is: "An ethically acceptable developmental relationship based on mutual trust, respect, understanding and empathy, where mentors and mentees constructively interact in order to enhance mentees' learning and knowledge, peer network development and psycho-social support."

Whitney (2007) observes that mentoring programs often fail because of lack of trust between the mentor and mentee, unmatched personal dynamics, fuzzy or ambiguous expectations, or overly inclusive and unquantifiable program goals. Sometimes they fail because the mentor's heart really isn't in the connection, the mentor is not doing all he or she can do for the mentee and this might be particularly true if the mentor perceives the mentee as a competitor. Good mentors, according to Watson (2005) offer empathy and time, ask questions rather than provide answers, engage in role plays, voice

their expectations and assumptions, and view the mentee as a whole person rather than just a junior person.

The South African Context and the Need for Mentoring at 'A'

The post-1994 democratic governments' efforts to improve the education for Black people (African, Asian and Coloured population groups) in South Africa have not made observable results even after one and a half decades. Inequalities continue between the Blacks and Whites in favour of the latter group on the provisions for enabling environments in schools *inter alia*, infrastructure, availability of textbooks, library and laboratory facilities, and quality of educators, especially at senior secondary school level. Kagee et al. (1997) echoed a similar sentiment in the late 90s by observing that due to the gross inequality in resource provision at primary and secondary school levels, students from the disadvantaged communities are underprepared for the demands of tertiary education compared to White students. Page et al. (2005) also raised similar concerns. Many Blacks come from socio-economically and academically disadvantaged communities. Most of the new medical students at 'A' are Blacks and mainly Africans who come from academically and socio-economically disadvantaged communities and are generally underprepared for the demands of tertiary education.

To address this imbalance, as is common in many sister medical schools in South Africa, there is an orientation for new students at 'A', which includes the general induction program. In the context of transforming a society from an apartheid past to a democratic society with the accompanying ramifications, 'transformation' is significant. Accordingly, 'A' has adopted the 'transforming the student' perspective of quality in higher education as a priority in line with one of the national priorities preferred by the South African Council on Higher Education. This perspective emphasized transforming the students into successful learners as well as providing a conducive environment to promote good teaching and learning in order to promote success of those who access 'A'. The induction program introduces the availability of mentoring program at A at the very outset of the students' entry into the institution and the participation in the mentoring program facilitates such a transformation.

New MBChB students at 'A' enroll for the Problem-Based Learning and Community-Based

Education (PBL and CBE) curriculum, with a student-centred self-directed learning approach with which almost all new students are unfamiliar. The mentoring program focuses on empowering new students to adjust to the curriculum and the general demands by providing academic and social support. Senior students, who had been student-mentees at their junior levels, serve as student-mentors to all new students. The program emphasizes that student-mentors are a source of support for the mentees. Nonetheless, it is never intended that the student-mentors replace the professional relationship or functions offered by lecturers, tutors and other academic staff.

The Mentoring program is administered by a Mentoring Committee, composed of staff and student mentors, which selects student-mentors. The criteria for selection of student mentors are mainly sound academic performance, leadership qualities and good inter-personal relationships. The program aims to bring about several positive benefits for both student-mentors and mentees. In the context of 'A', student-mentors and mentees are expected to improve on several skills, *inter alia*: develop academically and socially; improve problem-solving skills, communication skills, self-confidence and self-esteem; develop healthy inter-personal relationships; enhance time and stress management abilities; improve responsibility and leadership qualities.

At the beginning of both 2008 and 2009, before student-mentors were introduced to the mentees, they were given three 2-hour training sessions. The student-mentor trainings included, *inter alia*, general information on mentoring, time management, stress management and ways to act constructively during conflict situations with discussion around a few scenarios on student-mentor-mentee relationships. Both student-mentors and mentees were given guidelines regarding who may initiate a mentoring meeting, appropriate number of meetings per week, duration of meetings, appropriate venues, exchange of contact numbers, healthy student-mentor-mentee relationships and proper conduct during interactions and feedback. Student-mentors were then formally introduced to the mentees. In most cases, there was one student-mentor for two mentees and in a few cases, one student-mentor for three mentees. The expectation was that both the mentee and his/her student-mentor would visit each other at a mutually agreed upon venue within the institution other than places such as residence rooms. Mentees were also supported academically through tutoring by a few

selected academically good student-mentors. Mentees notify the student-mentors of difficult topics and the two would discuss it when they are free and sometimes even on weekends. Student-mentors assist mentees voluntarily without financial gain. Student-mentors were expected to initiate the first few meetings since the mentees were new to the university environment. After three months, the meetings were scheduled according to the mentees' needs.

Regular monitoring and evaluation were performed to identify student-mentors with mentoring strengths and eliminate weaker ones even during the course of the year, if and when needed. Evaluations of student-mentors by mentees occurred three times a year: three months after the introduction, at the middle of the year and finally at the end of the year through the use of survey questionnaires. Feedback from the first two evaluations served formative purposes for the respective left-over periods in the academic year whereas the last one was summative for the cohort but formative for the staff member in charge of training new student-mentors the following year.

Theoretical Frameworks

Mentoring programs are theoretically grounded on several theories. For example, Schulze (2009) relied on the situational theory which is characterized by learning as a function of the context and culture of the activities and social setting. Nevertheless, in a later publication, the same author shifted the focus to theories on self-esteem and self-efficacy on the one hand and constructivist theories on the other (Schulze 2010). Greyling and du Toit (2008) also emphasize the role of constructivism. Blunt and Conolly (2006) refer to Vygotsky's social constructivism (see Hodson and Hodson 1998) as well as Polanyi's competence development through knowledge becoming tacit and personal (Polanyi 1958). Chweu and Schultz (2010) refer to theories on motivation as well as on guidance and counseling amongst others. Gerber and Nyanjom (2009) emphasize the transformation theory where mentoring adopts a broader than personal and professional development approach and moves to the transformation of the organization itself and its educational goals. When the activities, interactions, benefits and expected outcomes are viewed through the lens

of an effective and efficient mentoring program, all of the above theories provide support.

Problem Statement and Rationale

The mentoring program for medical students at 'A' was in place since 1994. However, there have been no published reports on the views of mentees regarding the effectiveness of the program and its challenges. Furthermore, no attempt to compare the above factors from one year to the next has been made. In terms of the foregoing, it is necessary to document mentees' views in order to discover strengths *vis-a-vis* weaknesses in one year, implement student-mentor training improvement based on the feedback, and then replicate the study on the new cohort in the following year. It is the sharing of experiences on mentoring programs from different institutions that enables staff from higher education institutions to learn about successes, failures and challenges.

Aims, Objectives and Research Questions

The aim of the study was to investigate whether interventions based on the feedback from the 2008 study on student-mentor training made noticeable improvements in the student-mentees' views in 2009. The objectives were to: (i) gather mentees' views on the experiences of the mentoring program in 2008 and 2009; (ii) identify and describe challenges on the mentoring program that surfaced both in 2008 and 2009; (iii) compare the mentees' views from two successive years to assess the effect of intervention through modified mentor training. The research question was: Did interventions, based on the feedback from mentees' views from the 2008 study, make noticeable improvements in the mentees' views in 2009? In order to answer the research question, three sub-questions were formulated: (a) What are the student mentees' views on the qualities of their student-mentors in the successive years?; (b) Did the mentees' views remain similar or vary in the two successive years?; (c) Are there statistically significant differences on mentees' views on the student-mentor quality attributes emanating from student-mentor training modification which was based on the first cohort of mentees' views?

Ethical Considerations

The mentoring program at 'A' has been a program approved by the medical school that takes place

every year for all new MBChB first year students and an evaluation of the program when it ends is customary. Each year, questionnaires are administered in one mutually pre-agreed upon date, time and venue. The consultations for the above agreement happen at the end of a lecture when all the mentees are together. Both in 2008 and in 2009, mentees were verbally advised in advance at the consultation session about the purpose of the study and that only those who would like to voluntarily participate in the survey needed to come to complete the questionnaires. Consensus on pre-set parameters prevented interference with teaching and learning activities of persons involved with the exercise. Provision was also made for the mentees to sign individual 'informed consent' forms just before the administration of the questionnaires. The instrument allowed mentees to respond anonymously.

METHODOLOGY

Surveys are used to learn, amongst others, about opinions, views, desires, and challenges (McMillan and Schumacer 2007). In this study, surveys through questionnaires were considered as the most suitable means to gather the required data to find answers to the research questions. Two questionnaire surveys, one each at the end of two successive years' mentoring programs were administered to gather the views of two cohorts of MBChB first year mentees on some selected quality attributes of their senior student-mentors. In this cross-sectional survey, the mentees were unselected.

The instrument was a researcher-constructed survey questionnaire. Comments from two colleagues in the institution involved in mentoring (experts) were incorporated to improve upon the content and face validity of the first draft. It was further improved upon through the feedback from a pilot study involving 10 members of the 2008 cohort. The finally modified instrument was administered to the 2008 cohort. Since no noticeable problems were encountered in the main study in 2008, the same instrument was administered in 2009 also. Another reason for administering the same instrument was to facilitate the comparison of responses in two consecutive years, especially since improvements in the program were carried out based on the feedback from 2008. The questionnaire had three items to gather biographic data (age ranges, gender and population

group), 12 items with positive and negative views (mixed) on the student-mentor quality attributes (initiative to meet mentees; mentor-availability; mentor-honouring of appointments; mentor-patience; willingness to listen to mentees; feeling of superiority over mentees; neglecting mentees; providing academic support to mentees; giving social support, positive mentor-mentee relationship; compatibility with mentees; mentor-commitment) and finally mentees' overall view on the beneficial nature of the mentoring program in an open-ended question. On the 12 items on the student-mentor qualities, the respondents were required to choose one out of the four Likert scale options of: Strongly agree, Agree, Disagree and Strongly disagree.

There were 108 and 103 mentees in 2008 and 2009 respectively, including some of the few repeaters who opted to continue to be mentees. The questionnaires were administered and collected by a pre-trained research assistant. In 2008 and 2009, 12 and 9 mentees respectively did not attend the session to complete the questionnaires. In both years, no follow-up was done to distribute the questionnaires to those who failed to come on the pre-set dates in order to honour the voluntariness factor in terms of the ethical provision. Completed questionnaires were obtained from 96 (89%) and 94 (91%) mentees population in 2008 and 2009, respectively. The responses gathered were analysed using Statistica for Windows Release 5.1 to yield the frequency of

the responses and their comparison for the two years. p values of <0.05 were considered significant. The Strongly agree and Agree responses were collapsed to Agree (A) and the Strongly disagree and Disagree responses were collapsed to Disagree (D).

RESULTS

Table 1 shows the percentage of mentees' views in 2008 and 2009 on student-mentor quality attributes. The percentages reflected in Table 1 are rounded off values. The majority of respondents in 2008 and 2009 cohorts were in the 16-20 year age group: 68% in 2008 and 74% in 2009. The gender distribution of the respondents was in favour of females with 61% in 2008 and 59% in 2009. The major population group in both years was Africans: 86% in 2008 and 82% in 2009. For each attribute, the percentage of change that occurred between the views in 2008 and 2009 and their significance differences as p -values are shown.

The student-mentor initiative to meet mentees, availability of student-mentors, student-mentors honouring of appointments, positive mentor-mentee relationships and student-mentor commitment were significantly different between the mentees' views in 2008 and 2009 ($p = .010$, $p = .019$, $p = .001$, $p = .003$, and $p = .002$, respectively) towards improvement. Mentees' views on student-mentor-patience, willingness to listen to mentees, feeling of superiority over mentees, neglecting mentees, academic support to mentees, social support to mentees and

Table 1: Views of mentee cohorts in 2008 and 2009

<i>Senior student-mentor quality attributes</i>	<i>Mentees' responses 2008 (%)</i>		<i>Mentees' responses 2009 (%)</i>		<i>% change</i>	<i>p-value</i>
	<i>Agree</i>	<i>Disagree</i>	<i>Agree</i>	<i>Disagree</i>		
Initiative to meet mentees	44	56	67	33	+52	.010*
Mentor-availability	39	61	57	43	+46	.019*
Mentor-honouring of appointments	72	28	90	10	+25	.001*
Mentor-patience	85	15	89	11	+5	.409
Mentor-willingness to listen to mentees	90	10	94	06	+5	.409
Feeling of superiority over mentees	07	93	06	94	-14	.790
Neglecting mentees	17	83	12	88	-29	.329
Academic support to mentees	89	11	90	10	+1	.248
Social support to mentees	65	35	67	33	+3	.720
Positive mentor-mentee relationship	68	32	86	14	+26	.003*
Compatibility with mentees	76	24	81	19	+7	.419
Mentor-commitment	65	35	83	17	+18	.002*

Table 1: Comparison of responses from participants in 2008 and 2009

* p value $< .05$ is significant.

compatibility with mentees did not show significant difference between the two years ($p > .05$).

The first set of data served as a feedback to improve student-mentor training. The comparison and contrast between the first and second sets served to evaluate the effectiveness of the modified student-mentor training. The mentees' views at the end of 2009 showed a positive change of 52% ($p = .010$) in student-mentors taking initiative to meet the mentees. One of the guidelines given to student-mentors during the training was that since the mentees were new to the university environment, student-mentors should take initiative in meeting the mentees, especially during the first three months. Student-mentor availability also showed a positive change of 46% ($p = .019$). Nonetheless, probably due to the busy schedule of medical students, it appeared that despite the mentor-initiative to meet the mentees improving, the mentor availability did not show a similar trend. Student-mentors honouring appointments also improved (72% in 2008 and 90% in 2009, +25% change, $p = .001$). Student mentor-mentee relationship improved (68% in 2008 and 86% in 2009, +26% change, $p = .003$). Mentees' views on the commitment of student-mentors have also then changed from 65% in 2008 to 83% in 2009 (+28% change, $p = .002$).

DISCUSSION

It is worthy to note that although there was 65% committed student-mentors in 2008, only 44% took initiative to meet mentees and out of them, only 39% made themselves available to meet them. Steps were then taken at the beginning of 2009 to improve these attributes through attribute-specific student-mentor training. The improvement on taking initiative in 2009 is indicated by the change from 44% in 2008 to 67% in 2009 (+52% change). The positive impact on the mentees' views on commitment of student-mentors, in part, could have been enhanced by the significant changes towards improvement in student-mentor initiative, mentor-availability, honouring of appointments and positive mentor-mentee relationship. Watson (2005) recommended mentor-availability to mentees in addressing the mentor initiative to meet the mentees. Geber and Nyanjom (2009) observed that mentors who were inadequately trained were left to use their own intuition, amongst others, to carry out their mentoring responsibility and

recommended mentor training. The results of the present study support both recommendations.

Student-mentors' quality attributes such as patience and willingness to listen were already at appreciated levels in 2008 (90%), hence not much significant change ($p < 0.05$) was noticed in 2009 (94%). Only a few student-mentors have either neglected mentees (only 17% in 2008 and 12% in 2009) or showed superiority over mentees (only 7% in 2008 and 6% in 2009). This may be because they respected each other and earned mutual respect during the mentoring period which was expressed in terms of positive mentor-mentee relationship in both 2008 and 2009 (68% and 86%, respectively). Watson's (2005) recommendation on mentors' empathetic attitude to mentees and Whitney's (2007) emphasis on healthy mentor-mentee relationships are relevant in this context for effective mentoring.

As was expected, a high percentage of the student-mentors provided academic support in both 2008 (89%) and 2009 (90%). When the results are viewed against the observations by Kagee et al. (1997), Page et al. (2005) and Schulze (2010) on mentor roles on academic support for students from disadvantaged background, they are consistent positive impacts.

Kagee et al. (1997) emphasized social support to students from disadvantaged communities. The social support attribute was 65% and 67% in 2008 and 2009, respectively. This may be because one third of the mentees were university graduates from other disciplines pursuing a medical degree. Although 35% of mentees in 2008 and 33% in 2009 (+3% change) in their responses indicated that they did not receive social support, it may very well be the responses from the graduate cohort. These responses may either be because the graduate mentees did not seek social support or the mentors felt that there was no need to focus on it for the graduates. However, since the responses were anonymously gathered, it is difficult to assert this observation and this is a limitation.

Mentees' overall satisfaction and appreciation of the mentoring program was derived from several factors including student-mentor quality attributes. Each attribute referred to and other explicit and implicit factors contributed to the overall mentee satisfaction which was cumulative, generating the ultimate measure of the mentoring programs' success. The last item on the questionnaire was indeed on the mentees' overall views on the

mentoring program. It is worthy to note that 91% and 98% of mentees in 2008 and 2009 respectively were satisfied and appreciated the mentoring program. Although 100% overall mentee satisfaction was the mentoring program's target, the data showed that there was a reasonably good improvement towards the 100% in the overall satisfaction from 2008 to 2009. Blunt and Conolly (2006) observe that in terms of social constructivism, mentoring assists mentees to progress from their existing level to a higher level. In terms of academic and social achievement, mentoring initiatives are essential in achieving the transformation agenda in South Africa (Geber and Nyanjom 2009). The results of the present study indicate that the effectiveness of mentoring program at 'A' is progressing through continuous monitoring, evaluation and intervention. This assists to improve academic and social support as means to improve quality of education and achieve transformation of students entering the medical school from disadvantaged communities.

CONCLUSION

In terms of the aims of the study and research questions as formulated at the very outset, this study succeeded to gather the views of two cohorts of MBChB first year mentees on the selected quality attributes of their student-mentors in two successive years. The results showed that mentees' views exhibited statistically significant improvements on some attributes such as mentor initiative to meet mentees, mentor-availability, mentor-honouring of appointments, mentor-mentee relationship and mentor-commitment to mentees. This indicated that there was a positive relationship between the modified student-mentor training and mentees' views. Although 100% overall mentee satisfaction remains as the mentoring program's target, 91% and 98% of mentees were satisfied in 2008 and 2009 respectively despite no significant statistical difference on some student-mentor quality attributes. The study concludes that interventions based on the feedback from the 2008 mentees' views on student-mentor quality attributes made noticeable improvements in 2009. The limitation on this conclusion is that untested factors extraneous to the intervention may have also played a role in the improvement as is not unusual in social science research. Continued focus on the

weaker attributes without losing the existing strengths ought to improve the overall quality slowly but steadily. Continuously improved student-mentor training will be useful for all new university student-entrants, especially those from disadvantaged social and academic backgrounds, but that cannot be generalized from the results of this study at one medical school.

RECOMMENDATIONS

Only from further research involving new students enrolling for different programs nationally and internationally, broad generalizations can be made. As such, further research on improving mentoring programs based on mentee's feedbacks and review of student-mentor training across higher education institutions is recommended. The outcomes will help to gather further insights for improving mentoring programs in general and those for new medical students from disadvantaged backgrounds in particular.

ACKNOWLEDGMENTS

The financial and other support for the mentoring program from the institution's Faculty of Health Sciences and the part-sponsorship from the institution's Centre for Learning and Teaching Development in 2009 are acknowledged with gratitude.

REFERENCES

- Aagaard EM, Hauer KE 2003 A cross-sectional descriptive study of mentoring relationships formed by medical students. *Journal of General Internal Medicine*, 18: 298-302.
- Biehl B 1996. *Mentoring: Confidence in Finding a Mentor and Becoming One*. Nashville, TN: Broadman and Holman.
- Blunt RJS, Conolly J 2006. Perceptions of mentoring: Expectations of a key resource for higher education. *South African Journal of Higher Education*, 20(2): 195-208.
- Campbell TA, Campbell DE 1997. Faculty/Student mentor program: Effects on academic performance and retention. *Research in Higher Education*, 38(6): 727-742.
- Chweu G, Schultz C 2010. Mentoring life skills at a higher education institution: A case study. *South African Journal of Higher Education*, 24(5): 683-715.
- Geber H, Nyanjom JA 2009. Mentor development in higher education in Botswana: How important is reflective practice? *South African Journal of Higher Education*, 23(5): 894-911.

- Gibbs T, Brigden D, Hellenburg D 2005. Mentoring in medical practice. *SA Farm Pract*, 47(8): 5-6.
- Greyling WJ, du Toit PH 2008. Pursuing a constructivist approach to mentoring in the higher education sector. *South African Journal of Higher Education*, 22(5): 957-980.
- Hodson D, Hodson J 1998. From constructivism to social constructivism: A Vygotskian perspective on teaching and learning science. *School Science Review*, 79(289): 33-41.
- Kagee A, Naidoo T, Mahatey N 1997. Theoretical underpinnings of a Student Mentoring Program at a historically Black university in South Africa. *International Journal for the Advancement of Counselling*, 19(3): 249-258.
- McMillan JH, Schumacker S 2007. *Research in Education: A Conceptual Introduction*. Cape Town: Longman.
- Maphosa C, Shumba J, Shumba A 2007. Mentorship for students on teaching practice in Zimbabwe: Are student teachers getting a raw deal? *South African Journal of Higher Education*, 21(2): 296-307.
- Page B, Loots A, du Toit D, Don F 2005. Perspectives on a South African tutor/mentor program: the Stellenbosch University experience. *Mentoring and Tutoring*, 13(1): 5-21.
- Parker-Redmond S 1990. Mentoring and cultural diversity in academic settings. *American Behavioral Scientist*, 34(2): 188-200.
- Penner R 2001. Mentoring in higher education. *Spring*, 30(1):45-52.
- Polanyi M 1958. *Personal Knowledge: Towards a Post-Critical Philosophy*. London: Routledge and Kegan Paul.
- Poldre PA 1994. Mentoring programs: A question of design. *Interchange*, 25(2): 183-193.
- Saunders D, Gibbon M 1998. Peer tutoring and peer-assisted student support: Five models within a new university. *Mentoring and Tutoring*, 5: 3-13.
- Schulz S 2009. Mentoring novice researchers in higher education: A "communities of practice" perspective. *Koers*, 74(1 and 2): 117-137.
- Schulze S 2010. Mentees views of a structured mentoring program at Unisa. *South African Journal of Higher Education*, 24(5): 782-799.
- Straus SE, Chatur F, Taylor M 2009. Issues in the mentor-mentee relationship in academic medicine: A qualitative study. *Acad Med*, 84(1):135-139.
- Tariq VN 2005. Introduction and Evaluation of Peer-assisted Learning in First Year Undergraduate Bioscience. *Bioscience Education Journal*, BEE: j (6) Article 3. From <<http://www.bioscience.heacademy.ac.uk/journal/vol6/beej-6-3.htm>> (Retrieved September 20, 2009)-
- Topping J 1998. Peer-assisted assessment between students in colleges and universities. *Review of Educational Research*, 68(3): 249-276.
- Watson J 2005. Put Me in Coach. From <[http://match-boxgroup.com/mentoring_files/Bibliography % 20-%Mentoring.doc](http://match-boxgroup.com/mentoring_files/Bibliography%20-%20Mentoring.doc)> (Retrieved June 9, 2011)-
- Whitney K 2007. Reasons For Failed Mentor Programs Might Be Rooted In Psychology. From <http://clomedia.com/articles/view/reasons_for_failed_mentor_programs_might_be_rooted_in_psychology/2> (Retrieved June 9, 2011)-