



Learners' Experiences of Peer Tutoring in the Context of Outdoor Learning The Case of a Primary School

Tšepo Mokuku, National University of Lesotho; and
Likengkeng Ramakhula and 'Mantoetse Jobo, Lesotho College of Education

Abstract

The article explores peer tutoring in the context of outdoor learning at a primary school in Lesotho. The peer-tutoring approach was trialled to explore its effectiveness in promoting learning in large class sizes which characterise primary and secondary schools in Lesotho. An urban primary school was purposively selected for the study. The study involved 104 Class 6 learners as tutors, 86 Class 2 learners as tutees, and 8 teachers as facilitators. To determine the learners' perceptions on the peer tutoring and outdoor activities, focus-group discussions were employed. It is concluded that both the tutors and tutees responded positively to the outdoor learning activities and peer tutoring, but that the approaches need to be investigated further to establish tutor and tutee processes of interaction.

Introduction

From 1997 to 2010, the National University of Lesotho, the Lesotho College of Education and Durham University in the United Kingdom partnered in the Development Partnership in Higher Education (DeLPHE) Project. This was a project sponsored by the British government that set out to explore effective and relevant teacher education in Lesotho in relation to numeracy, English literacy and education for sustainable development (ESD). This article is based on the ESD strand. Our particular interest in ESD was to build on the work done by the Lesotho Environmental Education Support Project (LEESP) from 2001 to 2003. The research team believed that, while the LEESP had introduced some significant environmental education concepts in the school curricula (Mokuku, Jobo, Raselimo, Mathafeng & Stark, 2005), it fell short of activities that engaged learners in outdoor learning.

Furthermore, the DeLPHE team was concerned about the difficult circumstances in which many teachers in Lesotho schools had to work, in particular about the large size of many classes. As part of the government of Lesotho's initiative to improve access to education, free primary education was introduced in 2000, resulting in huge numbers of learners attending schools (World Bank, 2005). Against this background, peer tutoring was investigated as a teaching strategy that could optimise learning in large classes. Outdoor learning activities were considered complementary to peer tutoring, but also as significant in enhancing ESD in the curriculum.

Theoretical Underpinnings and Literature Review

Although innovative in the context of this study, peer tutoring is not a new idea. It involves drawing on the services of other learners in the same class, or in another class in the same school, to provide one-to-one or small-group support for learners (Fitzgibbon, 1992). The purpose is not to replace the teacher, but to find a way of supporting the teacher in developing pupil learning potential. Research indicates a number of benefits that peer tutoring can provide: It is an efficient and cost-effective way of supporting children's learning and can strongly reinforce the work of the teacher (Fitzgibbon, 1992). The strategy can also motivate both the tutors and the tutees, partly through the provision of individual attention for learners, and the act of tutoring itself provides an important learning opportunity for the tutors (Fitzgibbon, 1992; Tariq, 2005).

Cross-age/grade tutoring in particular has been found to develop social skills and discipline, especially among senior students, and to contribute to child-friendly schools (Greenwood, Carta & Hall, 1988). Communication, self-esteem, social interaction and a clearer sense of the learning environments are also improved (Topping, 1988). For tutorials to be effective, they should provide a non-threatening, supportive learning environment for the students, as this allows them to explore their own thinking (Schleyer, Langdon & James, 2005), and learners' motivation tends to increase when used together with 'group reward contingencies' (Johnson, Maruyama, Nelson & Skon, 1981; Slavin, 1985; Wentzel, 1999). Ryan and Deci (2000) have shown that peer tutoring works well for lower grades (1–3), and Rohrbeck, Ginsburg-Block, Fantuzzo and Mille (2003) have made similar positive observations about peer tutoring in challenging socio-economic situations.

In a context of large class sizes and poor resources, it was anticipated that an amalgam of peer tutoring and outdoor learning would create diverse learning possibilities in science subjects and ESD within a nexus of tutor, tutee and local environmental interaction.

'Outdoor learning' is learning that occurs outside the school building. It is significant in terms of 'bringing curricula alive, [and] it helps students understand our environment and related issues of sustainable development' (Beames, Higgins & Nicol, 2012:1). 'Sustainable development' involves development of an understanding among learners of the global implications of their actions with respect to resources such as energy and of the importance of taking responsibility for their actions (Beames, Higgins & Nicol, 2012).

Nielson (2009:140) argues that classrooms can be oppressive and that their 'walls are strong in keeping students comfortable with the idea that nature is outdoors and humans are separate from [the] environment'. Children also prefer learning outdoors than indoors (Waite, 2011). However, there is evidence that 'the indoors and outdoors may access different aspects of [a] child's personality and therefore may both be needed to provide holistic education for that individual' (Waite, 2011:76). The significance of lessons outdoors is to engage the class by way of numerous factors that shape their environment and wider society, and this 'allows the teacher/student dichotomy to be broken' (Nielson, 2009:145), as the teacher now explores new knowledge together with the learners. Teaching outdoors can, however, be difficult, particularly for novice teachers who might feel nervous and inadequate working with science and other

content in an outdoor context. Nevertheless, outdoor experiences often create enthusiasm and excitement among learners that can positively enhance the teachers' confidence (Carreir, 2009).

There is evidence that both well-organised, outdoor, subject-based lessons (Fančovičová & Prokop, 2011), as well as informal outdoor experiences (Rea, 2008; Waite, 2011) can benefit learners. Fančovičová and Prokop (2011) indicate that learners' attitudes to developing a knowledge of plants improved significantly following an outdoor-based biology lesson. Rea (2008) illustrates how more informal outdoor learning, in which learners construct their own meaning by exploring the environment and engaging in activities such as free writing and diarising of their experiences, can result in important benefits such as behavioural and attitudinal change, as well as increased confidence and assertiveness, among learners.

Outdoor learning and peer tutoring represent a shift from teacher-centred learning and whole-class activities to a more socio-constructivist approach to learning in this context. Outdoor learning is informed by context and values and represents a shift from technicist approaches to teaching and learning (Waite, 2011). From a socio-constructivist perspective (O'Loughlin, 1992; McRobbie, 1997; Waite, 2011), learning is not a simple transmission of knowledge from the teacher to the learner, but a complex construction of knowledge through dynamic class discussions, collaborative work, and activities that relate to learners' prior knowledge and experience (Vygotsky, 1978; Waite, 2011). With appropriate guidance from a more knowledgeable person, which post-Vygotskyian researchers describe as 'scaffolding' (Waite 2011), meaningful learning occurs. In peer tutoring, scaffolding may occur as learners discuss a topic and assist one another to construct meaning. Learning outdoors enhances knowledge retention, as learners make meaning in an enjoyable and positive emotional context and engage their varied senses in learning (Waite, 2011).

Methodology

The aim of this study was twofold: to explore the effectiveness of peer tutoring in large classes; and to investigate the impact of outdoor learning in a primary-school context. The study was guided by the following two research questions:

1. What are the learners' experiences of peer tutoring in the context of their participation in outdoor learning activities?
2. To what extent is peer tutoring appropriate for teaching and learning in a primary-school setting in Lesotho?

Selection of the case study school

This case study is located within an interpretive paradigm (Cohen, Manion & Morrison, 2007). It involved a peer-tutoring trial for two months in a primary school located in Maseru that had a population of about 800 learners (Classes 1 to 7).

The school was purposely selected owing to its proximity to the college where two of the researchers were based, thus enabling them to make regular visits in order to monitor developments. The head teacher of the school, the teachers and the Chairperson of the School

Board were approached about the study and were all keen to have peer tutoring trialled in their school. Eighty-six Year 2 learners were identified as tutees, and 104 Year 6 learners as tutors. These latter learners were chosen as tutors because they were older and therefore better positioned to help the younger Year 2 learners.

Data-collection method and analysis

After a two-month trial of the outdoor peer-tutoring activities, focus-group discussions were held with both the tutors and the tutees to evaluate the impact of these activities. The discussions were conducted in groups with a total of 20 tutors and 20 tutees, with each group having 5 members. The interviews were undertaken in the first language, Sesotho, to enable free communication with the learners. Two research-team members interviewed the tutors and the teachers interviewed the tutees, based on the teachers' advice that the learners might be uncomfortable if they had to communicate with the researchers. The learners' responses were written down as accurately as possible by the interviewers during the discussions.

The focus-group discussion questions for the tutors numbered 12 in all and sought to establish the following:

- The learners' views about their role as tutors;
- Their preferred and not-so-preferred activities;
- The extent of participation by the tutees and the lessons learnt;
- The benefits of peer tutoring; and
- Their views on how peer tutoring could be improved.

There were, on the other hand, only three simple discussion questions for the tutees. These sought to establish their preferred and not-so-preferred activities, as well as their preferred and not-so-preferred qualities of the tutors.

To analyse the data, the researchers typed out the handwritten learner responses, translated them into English and then organised them into the themes. The themes were interpreted in line with the reviewed literature and the research questions.

A description of the outdoor-learning and peer-tutoring activities that the learners were engaged in are described below in order to provide a background to the activities that were being evaluated.

Outdoor and peer-tutoring activities

The project team, comprising the whole DelpHE project team, introduced peer tutoring at the school for two weeks. This initial phase involved the planning of lessons based on Class 2 syllabus topics, as well as the engagement of an initial team of 20 learners as tutors. Following this phase, peer tutoring was conducted for two months: for the first two weeks, peer-tutoring activities were held once a week and, later, once every two weeks. Lesson duration was 40 minutes during the introductory phase and increased to one hour during the two-month period.

In the beginning, one tutor was allocated a group of four to six tutees, and, later, when the

remaining Class 6 members were incorporated, the number was increased to two or three tutors per group. The reason for increasing the number of tutors was to engage all the learners and optimise support for the tutees, and for the tutors to help and learn from one another.

Before each activity could be carried out, the tutors were briefed on the activity and on their expected role. During the activities, the teachers were also readily available to guide the tutors. At the end of each session, a reflective meeting was held with tutors to share their experiences and challenges, and to plan for the next activity. The actual peer-tutoring activities undertaken included the 'story stick', colour identification and camouflage, and simple-toy activities described below.

Story sticks

Story sticks are based on a Native American tradition (Lesson Pathways) and serve as diaries that record events for future recall or storytelling. They were used in the study to develop competencies in observation and oral communication skills. In this activity, tutees were asked to find a stick, to wander in the school grounds and to identify anything (e.g. animal hair, a seed, a piece of plastic) that they found interesting or which triggered certain memories. They then had to collect these items and tie them to the stick. As the tutors and the tutees walked around, they slowly wound some wool around the sticks to tie down the objects found, starting at the base of the stick. In this way, each stick was used to gather unique items recording learners' different 'journeys'.

Back in class, the tutees, guided by questions posed by their tutors, had to explain why they had selected certain items and what these items reminded them of. This encouraged the tutees to tell their individual 'story behind the stick' with reference to each of the items tied to it. At the end of the activity, different story sticks were displayed around the classroom as a reminder of the individuals' journeys.

Identifying colour and camouflage

This activity was based on tutees' awareness of colour in the environment and on the concept of camouflage. About 100 pieces of different-coloured wool were scattered among the vegetation in the school grounds. Some pieces were deliberately located against contrasting coloured backgrounds, others against similarly coloured backgrounds, and yet others against different backgrounds (e.g. on bare ground, in the trees or in the grass).

In this activity, tutees were expected to collect as many pieces of wool as possible and to tie each piece of wool through numbered holes in a card. This helped record the order in which the different pieces of wool were collected. Back in class, tutors led discussions about which colours were easily seen, the order in which the items were collected, and why this was the case. The discussions revealed the importance of colour in the environment, as well as of camouflage in relation to the survival of plants and animals.

Constructing simple toys and other items

In this activity, the tutors worked with the tutees to collect different materials, for example plastics, tins, and clay soil from the school environment. With the help of their tutors, tutees

used the materials collected to make different types of simple objects and toys, for instance ashtrays, balls, skipping ropes and clay models. Papier mâché was also made from collected paper in order to mould a variety of items. Some of the intended outcomes of the activity were that learners would appreciate how the reuse and recycling of materials found in the environment can address the problem of littering on schools grounds.

Findings

This section outlines the responses of the learners following the peer-tutoring activities. The responses are organised into six themes as indicated below.

Theme 1: Views about their new role

The tutors had varying views about their new role, and their feelings were mainly a mix of delight, nervousness and calmness about their new role. Responses included the following:

- I felt happy and relaxed.
- I was nervous at first, [but] then I felt relaxed.
- I did not know what to say, but, after we were told what to say, I felt relaxed.
- Initially, I [was frightened], but I was eager to learn.
- I didn't know what to expect.
- I was happy to be elected as a tutor.
- I was happy [that the] Sesotho language [was used] during the peer-tutoring sessions.
- [I was] frightened, because it was the first time [that] I was engaged in helping the young ones to learn.

Theme 2: Tutor/tutee relations

Many responses indicated that tutors appreciated their tutees' positive responses and their willingness to learn during the sessions. Their responses included the following:

- I liked [it] when they responded to [our] questions.
- Some understood activities easily.
- They were not playful, but were eager to learn.
- They were attentive.
- Not all of them were participating, but others responded well.
- Tutees were supportive of [one another].
- I liked guiding them, as they were eager to learn.

There were also views suggesting that the tutors learnt from the tutees and that some tutees did not cooperate:

- I liked [it] when they explained to us things we did not know. [For example], we did not know what other hats were made of, and they told us that they were made of plastics.

- They looked down [on] me because most of them are my playmates; so [they] did not take me seriously during the sessions.

In their descriptions of what they liked about the tutors, the tutees mentioned attributes that mattered to them, such as the tutors' patience, and their commitment to assist them and answer their questions.

- The tutors were very patient with us and they managed to control us when we lost concentration.
- The tutors had time to respond to our questions and we felt free to ask questions.
- They did their best to help us understand the activities we were dealing with.

The tutees also welcomed the freedom the tutors gave them to do the activities: 'They let us do the activities on our own [and] only [assisted] where we needed their help.' Tutees also had views on what did not make for a good tutor, and this concerned how tutors related to them:

- If we happened to lose concentration while doing the activities, the tutors did not deal with that; rather, they continued to do the work with those that were concentrating.
- Our tutor pinched [our] ears if we started to play.
- Some of the tutors ignored us if we did not understand the activity [that] we were supposed to do and tended to work with those who understood quickly.

Theme 3: Preferred activities

The tutors' responses suggest that they mostly enjoyed two of the three activities described above, namely the story stick and simple-toy activities:

- I liked the story stick, because I didn't know that one can use things to [tell] a story.
- [I liked] using litter to make useful materials, e.g. toys.
- [The] modelling activity was an eye-opener [for] me, as I was not aware that waste material could be used to make useful materials.

Of the three activities, one tutor mentioned the story stick as an activity that they did not enjoy, because the group they worked with 'struggled to understand it'. The same activity was not on the list of tutees' preferred activities. Instead, they mentioned only activities such as the following:

- Collecting wool and sorting it according to different colours.
- Recycling, because, after collecting all the paper and tins which were scattered [about], we made useful items like decorating materials, balls as well as ashtrays.

Theme 4: Perceived knowledge gains

Varied responses were elicited, suggesting some knowledge gains in science – although not all the knowledge gains were science-specific; most were related to more general aspects of learners' awareness and the use of litter, and how to work with the tutees. The third response below was specific to science knowledge. Responses included the following:

- I learnt that we should not throw away paper and plastic.
- We can collect rubbish [using] a story stick.
- I have learnt that plastics are useful if we do not burn them. We should collect them and use them, because, when we burn them, we pollute the atmosphere.
- Mashed paper can be used for [making] ornaments.

The tutors also thought the activities were a new and different way of learning science:

- Normally, science lessons are based on book knowledge, but, through peer-tutoring sessions, we [were] introduced [to a] hands-on approach to learning science.
- Activities were hands-on and we were introduced to finding information on our own.

Further knowledge gains mentioned by the tutors relate to their approach of caring for the little ones:

- I learnt to look after the little ones.
- [Our] approach to young ones has improved.

Theme 5: Perceived benefits of the outdoor activities in learning other subjects

Most learners found it challenging to identify subjects that they thought could be enhanced by the activities. This was evident from their silence in this regard. A few responses elicited suggest a potential benefit of the outdoor activities to Sesotho and health education:

- [Sesotho:] I have learnt some new names of plants in Sesotho.
- [Health education:] [I have learnt about] colours to be worn to promote road safety.

Theme 6: Personal development and performance

Regarding their personal improvement and performance, tutors mentioned their increased willingness not to pollute and their increased recognition of the possibilities for the reuse of waste, as well as both improved confidence in class and improved performance in other subjects.

- I can now tell other people not to pollute the environment.
- What has changed in me [is that,] if I cannot afford to pay my school fees, I can make things [using litter] that I can sell.
- They [the activities] have contributed [to] improving my performance in other subjects.
- They [the activities] have boosted my confidence.

- [I have] improved in sounds and spelling.
- [I] know most of the young ones better than before.
- [The activities have given] me confidence to talk in class.

Concerning performance, specifically in science, the tutors believed that they had benefitted in terms of remembering things they did, their improved participation and performance in science lessons, and in developing courage to answer questions:

- If we are asked a question in class, we will remember certain things that we have made.
- My performance has improved because I now score better marks.
- They [the activities] [have] helped me to participate in class.
- [I am less afraid] to answer questions in class.

Discussion

Outdoor learning and ESD-related knowledge

The learners indicated that, as a result of the activities, there had been some gains with regard to their scientific and environmental knowledge. The tutors' knowledge that burning litter causes air pollution and that litter should be reused instead is significant, given that litter is generally burned in schools. Some learners thought the activities made them better people and capable of advising others not to pollute. Tutees mentioned the collection of litter, leaving their school grounds clean, and becoming aware that they should not litter, as gains. The learners began to appreciate the implications of their actions and to be aware of their responsibility to keep the school grounds clean (Beames, Higgins & Nicol, 2012). Recognition of the impact of littering on school grounds is an important ingredient of ownership of the learning environment. Ownership involves believing that one's views matter and that taking part in decision-making in the school can lead to improved classroom performance by learners (Waite, 2011).

Apart from raising awareness of littering, the other intended outcomes of the story stick were the development of the learners' observation and oral communication skills. That the learners did not mention these benefits resonates with Waite's observation that 'play, especially with younger children, is an essential mode of learning, but children and staff may not always recognise alternative modes as "learning" unless they share characteristics of the formal' (Waite, 2011:67). The tutees did not include the story stick among their favourite activities, but the tutors liked the physicality aspect of the activity.

The colour-identification activity did not register as interesting to tutors, but was on the list of tutees' preferred activities, perhaps because of its play-like simplicity. Its value was mentioned in relation to wearing appropriate colours for road safety. The scientific aspect of the significance of colour in adaptation was somehow lost in the play-type activities.

Alternative pedagogy

The question whether tutors thought that the peer tutoring had introduced them to different ways of learning science was a higher-order question and was not easy for most tutors to answer.

However, some tutors stated that the activities allowed them to do things using their own hands, instead of learning science from the textbook. A shift from a textbook to experience at an early age is significant in developing appreciation of, and a caring attitude to, the environment (Palmer, 1998; Beames, Higgins & Nicol, 2012). The physical outdoor activities led by learners, such as the collection of litter to make toys, can support creativity among learners (Waite, 2011). Such creativity is quite rare and is limited in conventional whole-class teaching contexts.

Scaffolding and knowledge construction

While many tutors looked forward to their new tutorship role, some expressed feelings of nervousness or fright about being tutors. Carrier (2009) makes a similar observation with regard to pre-service teachers with limited outdoor teaching experience. Their confidence, states Carrier, was developed by engagement in outdoor teaching and by their recognition of learners' positive responses to their lessons. The knowledge gains that the tutors and the tutees made suggest that the peer-tutoring activities created opportunities for their engagement in an active process of co-construction of knowledge (Waite, 2011). Knowledge was not necessarily transferred from the tutors to the tutees, but was created by a nexus of interactions among the tutors, the tutees and the activities. The tutees assisted one another, as the tutors stated, and the tutors learnt from the tutees, thus affirming that the act of tutoring can provide an important learning opportunity for tutors (Fitzgibbon, 1992; Tariq 2005). In a sense, the outdoor learning activities broke down the initially envisaged tutor-tutee dichotomy as a result of the numerous factors that were brought into play (Nielson, 2009). There can, however, be challenges in levelling the power relations between 'teachers' and the 'taught' in this way. Tutors who might perceive their role as needing to teach as they themselves are taught in conventional teacher-led settings may be daunted by feelings of inadequacy and that they will not be respected by their playmate tutees – as some felt in this study. This emulation of what they mistakenly perceived as the teacher role is evidenced by tutors physically punishing the tutees by pinching their ears when they did not understand or lost concentration, behaviour which negates the creation of a non-threatening, supportive learning environment (Schleyer, Langdon & James, 2005).

The social relations among the tutors were on the whole positive, as evidenced by the expression of their views about one another. The tutees appreciated the tutors' assistance, as well as the fact that they were patient with them and answered their questions. This individual attention, which is rare in normal whole-class lessons, is an important motivation for learning (Fitzgibbon, 1992). Tutees were also allowed to do activities on their own, which created an opportunity for 'freedom and fun' (Waite, 2011), an outdoor learning value associated with less tightly structured activities that provides rich learning opportunities. This new learning space provided learners with the freedom to communicate in their mother tongue, a liberty from a usually inhibiting use of English as the language of instruction and one which the tutors found pleasing. Paradoxically, some tutees were concerned that the tutors did not keep them concentrating on the task, thus reflecting their (the tutees') conditioned dependence on the 'teacher' instead of taking responsibility for their own learning. By seeking to be controlled, they ironically 'negated' the potential new freedoms provided by an alternative learning environment. As shown by the specific scientific knowledge gains versus the other gains of

socialisation, confidence-building, and so on, it would seem that the pedagogical strategy developed here was stronger on the latter than on the former, which is to be expected, as learners (peers) may not have access to the wider body of scientific knowledge that needs to be mediated within a wider science education curriculum. The benefits of the lessons seem therefore to be more in the alternative pedagogical practices and experiences than in the substantive acquisition of scientific knowledge as a whole.

Development of social skills

The learners developed varied social skills through the peer-tutoring activities. Some tutors mentioned learning how to approach and take care of the little ones. Others stated that peer tutoring had boosted their confidence, had given them confidence to talk in class or had helped them to participate in class. Yet others believed that they knew most of the young ones better than before. Similar observations of learners developing self-confidence and improving their self-esteem have been made about peer tutoring (Topping, 1988) and are characteristic of cross-age/grade tutoring among tutors (Greenwood, Carta & Hall, 1988). These are essential personal aptitudes for learning that are not easily attainable through the traditional, whole-class, teacher-centred methods.

Conclusion and Recommendations

The learners' experiences of peer tutoring in the context of their participation in outdoor learning activities affirm some of the benefits of peer tutoring. The strategy has the potential to support meaningful learning as well as improve learners' self-esteem, communication skills, and many other social skills. The application of this strategy in Lesotho primary schools, which are characterised by large class sizes and very limited teacher-learner interaction, could be highly beneficial in terms of the facilitation of tutees' meaningful learning and the development of tutors' academic and social competencies. While it is recognised that such strategies cannot take the place of qualified science teachers, it is to be noted that they can help with complementary teaching and learning experiences that extend what science teachers can offer learners.

It is recommended that further research on peer tutoring be undertaken. The studies could be multiple case studies that investigate in depth the processes of interaction of tutors and tutees and the extent to which meaningful learning of the subject matter is achieved.

Notes on the Contributors

Tšepo Mokuku is a Senior Lecturer in Science Education at the National University of Lesotho. He holds a PhD in education, specialising in environmental education. His research interests include biodiversity conservation and outdoor learning. Email: tmmokuku@yahoo.com.

Likengkeng Ramakhula is a Lecturer in Geography Education at the Lesotho College of Education. She holds a master's degree in education, specialising in geography education. Her interests are geography and environmental education. Email: lntsaba@yahoo.com.

'Mantoetse Jobo is a Lecturer in Agricultural Education at the Lesotho College of Education. She holds a master's degree in agronomy and farming systems (with strong emphasis on environmental education) and is pursuing a PhD in education for sustainable development. Her interests are natural resource management and interdisciplinary integration for teaching and learning. Email: mantoetse_ejobo@yahoo.co.uk.

References

- Beames, S., Higgins, P. & Nicol, R. (2012). *Learning outside the Classroom. Theory and guidelines for practice*. London: Routledge.
- Carrier, S.J. (2009). The effects of outdoor science lessons with elementary school students on pre-service teachers' self-efficacy. *Journal of Elementary Science Education*, 21(2), 35–48.
- Cohen, L., Manion, L. & Morrison, K. (2007). *Research methods in education* (6th edn). London: Routledge.
- Fančovičová, J. & Prokop, P. (2011). Plants have a chance: Outdoor educational programmes alter students' knowledge and attitudes towards plants. *Environmental Education Research*, 17(4), 537–551.
- Fitzgibbon, C. (1992). Peer and cross-age tutoring. In Alkin, M. (Ed.). *Encyclopedia of educational research* (6th edn). New York: Macmillan.
- Greenwood, C. R., Carta, J. L., & Hall, V. (1988). The use of peer tutoring strategies in classroom management and educational instruction. *School Psychology Review*, 17, 258–275.
- Johnson, D.W., Maruyama, G., Nelson, D. & Skon, L. (1981). Effects of cooperative, competitive, and individualistic goal structures on achievement: Meta-analysis. *Psychological Bulletin*, 89.
- Lesson Pathways. (nd). <http://www.lessonpathways.com/Pathways/Featured/21147>.
- McRobbie, C. (1997). A social constructivist perspective on learning environments. *International Journal of Science Education*, 19(2), 193–208.
- Mokuku, T., Jobo, M., Raselimo, M., Mathafeng, T. & Stark, K. (2005). Encountering paradigmatic tensions and shifts in environmental education. *Canadian Journal of Environmental Education*, 10, 157–172.
- Nielson, A.L. (2009). The power of nature and the nature of power. *Canadian Journal of Environmental Education*, 14, 138–148.
- O'Loughlin, M. (1992). Rethinking science education: Beyond Piagetian constructivism towards a sociocultural model of teaching and learning. *Journal of Research in Science Teaching*, 29(6), 781–820.
- Palmer, J.A. (1998). *Environmental education in the 21st century. Theory, practice, progress and promise*. London: Routledge.
- Rea, T. (2008). Alternative vision of learning: Children's learning experiences in the outdoors. *Educational Futures Journal*, 1(2), 42–50.
- Rohrbeck, C.A., Ginsburg-Block, M.D., Fantuzzo, J.W. & Miller, T.R. (2003). Peer assisted learning interventions with elementary school students: A meta-Analytic review. *Journal of Educational Psychology*, 95(2), 240–257.

- Ryan, R.M. & Deci, E.L. (2000). Self determination theory and the facilitation of intrinsic motivation, social development and well-being. *American Psychologist*, 55, 68–78.
- Schleyer, G.K., Langdon, G.S. & James, S. (2005). Peer tutoring in conceptual design. *European Journal of Engineering Education*, 30(2), 245–254.
- Slavin, R.E. (1985). An introduction to cooperative learning research. In Slavin, R.E., .(Eds), *Learning to cooperate, cooperating to learn*. New York: Plenum Press.
- Tariq, V.N. (2005). Introduction and evaluation of peer-assisted learning in first-year undergraduate bioscience. *BEE-j*, 6. Available at: <http://www.bioscience.heacademy/journal/vol6/beej-6-3.pdf>.
- Topping, K. (1988). *The peer-tutoring handbook: Promoting cooperative learning*. Cambridge, MA: Brookline Books.
- Vygotsky, L.S. (1978). *Mind in society*. Cambridge, MA: Harvard University Press.
- Waite, S. (2011). Teaching and learning outside the classroom: Personal values, alternative pedagogy and standards. *Education*, 39(1), 65–82.
- Wentzel, K.R. (1999). Social-motivational processes and interpersonal relationships: Implications for understanding motivation at school. *Journal of Educational Psychology*, 91, 76–97.
- World Bank. (2005). *Building on free primary education, primary and secondary education in Lesotho. A country status report*. Africa Region Human Development Paper Series No. 101.