

Teaching and Assessment Techniques Used at the University of Botswana: Students' Voices in the Faculty of Education

Philip Bulawa, Elizabeth G. Seeco, Keinyatse T. Kgosiadialwa & Nonofu C. Losike–Sedimo

Faculty of Education
University of Botswana
Mobuto Dr, Gaborone, Botswana

Abstract

There is on-going debate about ways in which university lecturers should present content and skills that would provide opportunities for students in higher education to learn better. While suggestions pertaining to what exactly is the best method of content delivery have been made, it would appear that there is no consensus regarding what really constitutes effective teaching techniques. Research shows that students in higher learning have been the most qualified source of information about measures of lecturer or course effectiveness. This qualitative study therefore sought to investigate the views of different groups of pre-service and in-service undergraduate students about teaching and assessment techniques used at the University of Botswana. Using a questionnaire, the study sought the perceptions of in-service B Ed (Educational Management); Post Graduate Diploma in Education (PGDE); as well as second year pre-service and in-service undergraduates from other faculties (taking courses in the Faculty of Education) regarding teaching and assessment techniques specifically used by their lecturers to teach. Data were analysed thematically, and the results revealed varying preferences of teaching and assessment techniques by students.

Keywords: Pre-service, In-service, Undergraduate, SECAT, Experiential learning, External reviewer

1. Introduction

The expansion of higher education in many countries, and the emphasis on among other things, access, retention rates and life-long learning justifies the need for scholars to explore the nature of different learning styles (Healey & Jenkins, 2000). This involves, inter alia, effort to articulate what teachers “understand from learning theory about learning how to learn and how Assessment for Learning (AfL) relates to it” (Black, McCormick, James & Pedder, 2006, p. 120). A study conducted by Samuelowicz and Bain (2001) in which thirty-nine academics who represented a range of disciplines were interviewed to seek “their typical ways of thinking about teaching and learning, and their dispositions to teach in particular ways” (p. 299) reflects diverse conceptions about teaching and learning in higher education.

There has been increased efforts “to explore the types of classroom experiences that are most effective for student learning” (Lammers & Murphy, 2002, p. 55), and the academic world has increased considerably its activity pertaining to teaching and learning of evolution (Alters & Nelson, 2002). Research has examined a number of teaching techniques, including the lecture method, which has a long history in academic circles. Drawing on Blackburn et al’s (1980) survey of faculty at 24 institutions of different types, Lammers and Murphy (2002) revealed that approximately 78 percent of faculty indicated that the lecture was their main method of instruction, in contrast to 55 percent who stated that discussion was their second method. So the literature provides evidence that shows that the lecture method has been dominant in higher education teaching.

However, Lammers and Murphy (2002) point out that, in recent years various other non-lecture teaching activities have emerged, and the literature on teaching and learning reveals that all these teaching activities can either be effective or ineffective. As indicated by Black et al (2006), this calls for a strategy that might help schools to achieve the aim of helping their pupils to become more effective as learners. Black et al argued that such a strategy has to “start from established understanding of how children learn and of the skills and practices that they may already possess when they enter school” (p. 126). The University of Botswana (UB) like other higher education institutions globally, promotes innovative academic activities that would stimulate students to actively participate in the teaching and learning process than to be passive recipients of knowledge.

2. Statement of the Problem

Teaching at UB has been repeatedly cited by evaluation reports and researchers in higher education as needing a transformation to cater for learners' experiences and learner outcome (Bush, 2015). To this end the University of Botswana has come up with Learning and Teaching policy that suggests innovative teaching where lecturers are to become pedagogy reformers while students construct knowledge from their experiences. Similarly external reviewers have as one of the recommendations, the need for University lecturers to constantly engage students regarding teaching and learning (Bush, 2015). Hence teaching techniques should lead to active and reflective learning experiences. The teaching and learning policy also requires students to assess the overall teaching performance of their lecturers in all teaching programmes using an instrument called Student Evaluation of Courses and Teaching (SECAT).

Against this background, it becomes imperative to seek the views of students about teaching and assessment techniques used at the University of Botswana in order to determine the manner in which the university conducts its teaching role. The views of students are also useful in establishing the relevance and appropriateness of the teaching and assessment techniques to the kind of learner which the university as an institution of higher learning aspires to produce.

3. Purpose of the Study

The University of Botswana has a vision to be a centre for academic excellence in Africa and the world, and is committed to strive for continuous improvement in its programmes. Against this background, the university has, for all its intents and purposes, come up with a policy to engage external reviewers for all its academic programmes in order to assess both their structure and content (Bush, 2015). Further in line with its vision, the university has a policy that requires all students to assess how their lecturers teach in all the courses they offer. The purpose of this study was therefore, to investigate the views of different groups of pre-service and in-service undergraduate students about teaching and assessment techniques used in the Faculty of Education.

4. Research Questions

The study was guided by the following research questions:

1. What are the students' perceptions about the teaching techniques/methods used by University of Botswana lecturers?
2. What are the students' perceptions regarding modes of assessment at the University of Botswana?

5. Literature Review and Theoretical Framework

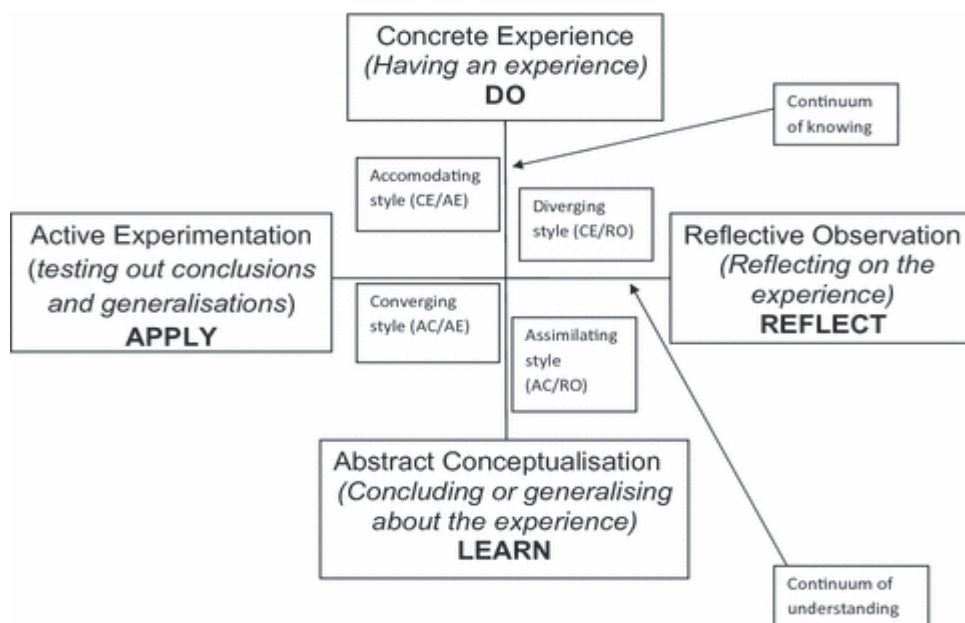
Many evaluation systems that are in use today were developed in the early to mid-1970s and reflect what educators believed about teaching at that time. However, research has shown that there is need for new approaches to teaching that should take into account the goals for student achievement that have evolved such that interest is now “in more complex learning, in problem solving, in the application of knowledge to unfamiliar situations” (Danielson & McGreal, 2000, p. 3). Universities are therefore, under pressure to engage in active learning strategies that create a classroom environment in which students would actively participate in the learning experience rather than sit as passive listeners. A range of active learning activities such as student presentations, performances, demonstrations, practice of skills, sharing in pairs or small groups, using technology in the classroom, debate, and class discussion are recommended in the literature (Biggs, 1996; Kolb & Kolb, 2005; Lammers & Murphy, 2002).

In adopting such active learning activities, lecturers would be seen to be striving for excellence which involves among other things, “a high level of proficiency in stimulating students and fostering their learning in a variety of appropriate ways” (Healey, 2000, p. 172). This pedagogic shift from the traditional teacher centred approach, in which the emphasis is on teachers and what they teach, to a student centred approach, in which the emphasis is on students and what they learn, requires a fundamental change in the role of the educator from that of a didactic teacher to that of a facilitator of learning” (Spencer & Jordan, 1999, p. 1280). The call therefore, on universities to place greater emphasis on awareness of new teaching methods (Handelsman et al, 2004), suggests that lecturers would not only teach students how to learn from known sources in the classroom, but also teach them how to create new knowledge (Anderson et al, 2011).

5.1 Improving students’ learning in higher education through experiential based teaching methods/techniques.

Using Kolb’s experiential learning theory, this study explored students’ perspectives about teaching methods commonly used by different lecturers at the University of Botswana. The theory provides “a rationale for a variety of learning methods, including independent learning, learning by doing, work-based learning, and problem-based learning” (Healey & Jenkins, 2000, p. 186). Abdulwahed and Nagy (2009) maintain that Kolb’s theory has been well accepted as an efficient pedagogical model of learning that “provides clear mechanisms of teaching and learning design, which are strongly underlined with the constructivist view on the way people construct their knowledge” (p. 284). Four types of abilities suggested by this theory that effective learners should have are reflected in Kolb’s cycle of learning diagram shown below. These are: (1) Concrete Experience ability (CE), (2) Reflective Observation ability (RO), (3) Abstract Conceptualization ability (AC), and (4) Active Experimentation ability (AE).

Figure 1: Kolb’s Learning Cycle with Learning Styles(Woods, 2012)



Kolb’s cycle of experiential learning, as noted by Woods (2012) “is used in the workplace including in education and provides a key to understanding how different people learn and therefore how we can tailor our teaching to support the learning process and facilitate others in the learning journey.” (p. 173). Woods further points out that Kolb believed that it is imperative for tutors to create an environment that is conducive to learning for the students and that they can provide support to facilitate students to reach their goals, hence its relevance to this study. According to Kolb and Kolb (2005), the theory draws on the work of such prominent 20th century scholars as John Dewey, Kurt Lewin, Carl Jung and Paulo Freire who give experience a major role in their theories of human learning and development. Kolb and Kolb (2005) revealed six propositions shared by these scholars on whom the theory of experiential learning is built, two of which are discussed in this study. First, is the proposition that learning should be best perceived as a process, not in respect of outcomes?

The emphasis is that, to improve learning in higher education, the focus should mainly be on the engagement of students in a process that would enhance their learning. This process should include feedback on the effectiveness of the students' learning efforts. A teacher in Samuelowicz's and Bain's (2001) study believed that students have to become independent learners and perceived the process of becoming such a learner as significant in the professional and personal development of students. Such a process would lead "to acquisition of the knowledge, attitudes and skills needed to function as a competent practitioner" (p. 315). The teacher in this study suggests among other things, that it is the students who should take centre stage, learn to reflect on their own approaches, and be in a position to make judgement regarding what works and what does not work, and to be able to identify reasons for successes or failures. Further expected from students by this teacher is their ability to be involved in the assessment of their own work and be self-critical.

Second, relevant to this study is the proposition which perceives learning as the process of creating knowledge. In this case experiential learning theory "proposes a constructivist theory of learning whereby social knowledge is created and recreated in the personal knowledge of the learner," in contrast to the transmission model, a model upon which "current educational practice is based, where pre-existing fixed ideas are transmitted to the learner" (Kolb & Kolb, 2005, p. 194). The emphasis therefore, is on the need for the promotion of students' active and self-regulated learning, a new pedagogy which should involve "teachers becoming facilitators of students' learning processes and assisting students in developing their own learning strategies" (Hoekstra, Brekelmans, Beijaard & Korthagen, 2009, p. 664). In the 1960s Bruner called for discovery methods that would allow the learners to discover new rules and ideas than to require them to memorise what the teacher says (Mayer, 2004). This suggests less reliance on a teacher-centric method which focuses "on teachers as the "deliverer" of knowledge and the student, the recipient" (Gopinah, 2015, p. 1).

5.2 Learning and assessment

In addition to teaching techniques, Gopinah (2015) recognised assessment as a significant "aspect of education that affects teachers, students, and the institutional frameworks that offer and/or regulate the delivery and quality of education" (p. 3). Gopinah (2015) pointed to the need to understand that the different forms of assessment have both advantages and disadvantages. Regarding decision on the assessment tasks, Biggs (1996) maintained that it is imperative to ascertain the extent to which such tasks "embody the target performance of understanding, and how well they lend themselves to evaluating student performances" (p. 356). Drawing on Dweck (2000), Black, McCormick, James and Pedder (2006) highlighted as encouraging some aspects of learning referred to in the literature as assessment for learning. An example in this case, is a practice developed to improve classroom discourse by way of encouraging teachers to frame their questioning such that it would explore essential features of learning, as well as encouraging all learners to contribute and share ideas about whether or not they are confident that they are correct. The fundamental principles are that conceptual change needs to "evolve from the learner's pre-existent understanding, that the learner must be actively involved in the learning, and that such involvement ought to take place in social and community discourse" (p. 128). The belief is that when a teacher has created a climate of this nature, then learners themselves would be in a position to ask questions of each other, hence the focus would shift from the teacher to the learners.

Further revealed by Black, McCormick, James and Pedder (2006) is the practice that calls for emphasis on the provision of comment-only feedback on written work, with the requirement that learners should respond to such comments by way of further work. Another practice is the development of peer and self-assessment, which is regarded "key to enhancing metacognition, self-direction, and, through peer discussions, the social dimension of learning. It also requires the learners to exercise a degree of autonomy from the teacher as the assessor and judge of quality" (p. 128). In sum, Healey (2000) emphasised that those who teach in higher education institutions are duty bound "to learn how to adopt a scholarly approach to teaching and how to collect and present rigorous evidence of their effectiveness as teachers" (p. 170). He maintains that the onus is on those who teach in higher education to reflect, inquire, evaluate, document and communicate about teaching. The emphasis is on the significance of evaluating and reflecting on one's own teaching practice and the student learning that follows. In addition, it is critical that lecturers' approach to teaching should reflect that they are familiar with current ideas in their subject and further informed by latest ideas pertaining to the teaching of that subject. As an effort to apply Healey's approach to teaching, this qualitative study, sought the perceptions of the research participants about teaching and assessment techniques adopted by University of Botswana lecturers.

5. Method

In this study we sought to investigate the views of pre-service and in-service undergraduate and postgraduate students of the University of Botswana regarding teaching techniques and assessment used by their lecturers. Data were obtained from 138 participants through a questionnaire completed by 128 students. Participants were randomly selected from four classes out of six taught by three of the four researchers in semester two and these represented 67 percent of all classes taught by these researchers. The student participants were 70 Postgraduate Diploma in Education (PGDE), 28 final year in-service Bachelor of Education (B Ed-Educational Management), and a mixed cohort of 30 second year pre-service and in-service undergraduates from other faculties who were taking a course in education as an elective.

6. Findings and Discussion

The findings provided the students' perspectives about teaching and assessment techniques used by their lecturers at the University of Botswana. This was in response to the two research questions: "What are the students' perceptions about the teaching methods/techniques used by University of Botswana lecturers?" and "What are the students' perceptions regarding modes of assessment at the University of Botswana?" The views of these students can be sorted into four categories to do with; techniques of teaching commonly used in faculties; students' preferred and most effective techniques of teaching; mode of assessment commonly used and preferred assessment techniques; and students' views about feedback loop between them and lecturers.

6.1 Technique of Teaching Commonly Used in Faculties

Students were asked to reflect on all the courses they had done in the Faculty of Education and other Faculties and indicate a teaching technique that has been commonly used by their lecturers to teach them. Participants' reflections indicated that while lecturers across Faculties used a range of teaching techniques, the teaching technique commonly used is lecture. The second popular technique frequently used was group discussion and presentations, followed by such other learner-centred techniques as role play, peer teaching fieldwork for experiential learning, and debate. What therefore emerged from the findings as the commonly used technique across faculties is also reflected in the literature on learning theories (Lammers & Murphy, 2002).

Another technique rated after group discussion especially by a substantial number of in-service B Ed (Educational Management) cohort was practical or fieldwork for experiential learning. This emerged possibly due to some of their management courses which required them to work with schools on such topical topics as staff development in education and school development policies. Again here the literature on experiential learning supports the views of the students on the need for learners' active engagement in practical activities that would give them an opportunity to be involved in among other things, problem solving, and the application of knowledge to unfamiliar situations (Danielson & McGreal, 2000).

6.2 Students' Preferred and Most Effective Techniques of Teaching

It was significant to find out from the students their views on the three techniques of teaching they preferred and also found most effective to their learning. They were also asked to provide justification for their choices. The two techniques of lecture and group discussion cut across all the cohorts, with the majority of B Ed (Educational Management) students listing teaching techniques of their choice as group discussion and presentation using powerpoint, lecture, and fieldwork for experiential learning in this order. Similarly, most PGDE students also ranked their first two preferred techniques of learning as group discussion and presentations, and lecture, with role play rated as their third choice. Another one also regarded by several students was peer teaching. As it stands, the findings show that the techniques most appealing to the students are those which are learner-centred, notably group discussions and presentations, as well as other related techniques such as role play, peer teaching and fieldwork. However, there was a strong advocacy for lecture as a significant technique of teaching in certain instances. Students who made some comments in support of group discussions as their most preferred technique of teaching argued that it promoted team work as indicated in the following comments. "Group work promotes cooperation and team work which is necessary in the real world." "Group work presentations because they encourage spirit of team work." Others commended group activities for being learner-centred, which in their opinion gave learners the opportunity to actively participate in their own learning and therefore, become independent and develop critical thinking.

Such comments as “group work is learner centred;” “group work equips students with the right amount of confidence and boost their critical thinking ability;” and “group discussions make us contribute to our learning;” are further reflective of the students’ point of view. Similar comments made by students include, “I believe group discussion and presentations reinforce students to become independent in their learning;” “group work is learner centred henceforth requiring learner participation;” and “group discussion allows students to express their views openly and share ideas. This builds students’ confidence and self-esteem hence they are able to express their ideas.”

Although other learner-centred techniques such as role play, peer teaching and fieldwork were mentioned by fewer students in comparison to group work and presentations, they also received positive students’ comments. One student indicated that she was for role play “because it helps in creating an active environment;” and another one argued that role play “is practically oriented and students use their ability to demonstrate.” There were some students who were for peer teaching and one of them maintained that “peer teaching gives students a platform of growth in terms of public speaking.” Further were the views that “it encourages peer to peer interaction hence a better understanding for students;” and that “in peer teaching students learn better from others who are their peers.” Fieldwork was also found mainly by in-service management students as a useful technique of teaching with one student describing it as “more student-centred” and that this technique is “an opportunity to discover and an experiential learning for the students.” Another one described it as “a discovery technique that exposes students to real world issues.” In addition a student pointed out; “fieldwork exposed us to experiential learning which is more relevant to what we are dealing with at work.”

The students’ positive comments about learner-centred techniques give credence to positive views in the literature that adopting such techniques would among other things, stimulate students thinking and foster their learning in different and appropriate ways or would be an opportunity for educators in higher learning institutions to teach them how to create new knowledge (Anderson et al, 2011;Healey, 2000). Comments about the lecture technique were also wide ranging, with one student stating; “I prefer lecturing because some students may not be willing to participate, so as a teacher you have to push content.” Another student argued: “The lecture method is effective when one wants to teach a lot of content in a short period of time.” There were students who supported the lecture technique as an effective way of imparting knowledge, and one such student stated: “Lecture gives time to impart knowledge to students.” Further comments included: “Lecturing is good because as students we learn directly from our teachers;” and “the lecturing method saves time;” The main reason emerging from the findings regarding students’ preference for the lecture was coverage of the curriculum within the prescribed time frame. This could suggest the extent to which teaching is influenced by the importance to cover the entire course outline in time for examinations at the University of Botswana. There were however other comments which were not about coverage of the curriculum such as, “lecturing covers a large group easily;” and “lecture because difficult concepts are clearly explained.”

It is evident from the findings that, while scholars such as Hoekstra, Brekelmans, Beijaard and Korthagen (2009) are strong advocates of a new pedagogy which only involves teachers as facilitators of students’ learning assisting them to develop their own learning strategies, students in this study still found lecture to be a relevant technique in teaching and learning that lecturers in higher education should continue to use.

6.3 Mode of Assessment Commonly Used and Preferred Assessment Technique

Participants’ views in this study were also sought about techniques used to assess their academic performance. It was very significant to find out exactly how the students were feeling about the manner in which they were being assessed and what they thought would be best practice in comparison to current assessment techniques. The findings showed that lecturers regularly assess their students and that the techniques of assessment mainly used by different lecturers are individual written assignments, examinations, as well as group discussion and presentations in that order. However, the mode of assessment preferred by most students was group discussion and presentations, which is a more learner-centred technique, in line with the literature’s emphasis on the need for the creation of a climate in which learners would have the opportunity to ask questions of each other, thereby focusing more on the learners than on the teacher (Black, McCormick, James & Pedder, 2006; Gopinah, 2015). One of the students who was for group discussion and presentations argued that, “this allows students to develop confidence and self-esteem.”

There was a student who argued for the replacement of examinations with group discussion and presentations contending that; “students are capable of just reading for the examinations and pass which does not necessarily mean they have mastered the content.” There was however, a minority but significant number of students who were critical of any attempt to use group work for assessment. These were students who mainly preferred individual assignments and examinations. Most of them were of the view that assessment through group work would unduly benefit students who are mainly in the habit of not participating in group activities. Some examples of comments below represented students in this category. “It is difficult to work in a large group as some people don’t cooperate while others piggy ride others and do not do any work.” Similarly, another one described group work as “one size fits all” and that assessment of a group activity would not be fair since “in group work other students do not take part, and each student’s knowledge is hardly assessed.” Another student expressed her sentiment thus: “I prefer individual assignments because they enable an individual to do research independently and find out what others think than to rely on others where one can just copy and get away with murder.” There were other students’ comments such as, “group activity limits student capacity and pace of learner since it must then be moderated to other students;” and “individual assignment is an opportunity for each student to show his or her individual ability.”

6.4 Students’ views about feedback loop between them and lecturers

The majority of students expressed concern regarding lack of opportunity to give feedback about how they are being taught and assessed by their lecturers. While they appreciated the opportunity offered to them by the University of Botswana to assess their lecturers through Student Evaluation of Courses and Teaching (SECAT) instrument, the majority felt that this was not sufficient since this only happened at the end of the semester. They were of the view that assessment of teaching and learning by students should be more frequent, and as indicated in the literature that such evaluation would help lecturers reflect on their own teaching practice and the student learning that follows (Healey, 2000). Their suggestions included: “Lecturers’ assessment by us students should be more regular and it is important that we receive feedback especially on how our concerns and suggestions have been addressed.” “There is need for regular assessment of lecturers’ ways of teaching so that they know exactly how students feel.” “The university must have more of assessment of teaching by students because this can help lecturers improve their teaching strategies.” “Assessing lecturers alone is not enough unless as students we also have an input on what should be assessed.”

They further called for students’ input regarding the design and nature of instrument that should be used to assess teaching and learning. For many students SECAT was more of an administrative instrument that meant very little to them more so that the teaching and learning hardly ever change to reflect students’ assessment. They also stated that they never even receive any feedback from the university pertaining to the outcome of their assessment which in their view renders the process a futile exercise. Their standpoint is reflected in the following comments. “Assessment must be done but both students and lecturers must agree on what should be assessed and how the information will be used, at the moment it’s like SECAT is being imposed on us.”

“It’s good to assess our lecturers but the way it is being done doesn’t help us because we only do it at the end of the semester, and how the information gathered will be used is not clear. So there is no transparency.” “We use a tool that comes from the university without our input and no one explains how our views will be used to improve teaching. This is not fair.”

7. Implications for the Study

The most important implication for this study is that students differ in their perspective about the manner in which they should be taught. This therefore, means that lecturers should as much as possible use different techniques of both teaching and assessment to cater for this diversity of learners. The views of the students show that while the main technique of teaching has been the lecture, it is important that lecturers adopt other techniques. Similarly, there is need for diversity in the manner in which students are assessed so that it takes into consideration their distinct preferences as highlighted in the findings. The findings also revealed that while lecturers may have their own perspectives about techniques most suitable to teach and assess students, these might not be the best interest of the students. This calls for students’ constant feedback on lecturers’ techniques of teaching and assessment for them to be well informed about what could be of benefit to the learners.

References

- Abdulwahed, M. & Nagy, Z. K. (2009). Applying Kolb's Experiential Learning Cycle for Laboratory Education. *Journal of Engineering Education*, 283-294. [http://doi: 10.1002/j.2168-9830.2009.tb01025.x](http://doi:10.1002/j.2168-9830.2009.tb01025.x)
- Alters, B. J. & Nelson, C. E. (2002). Perspective: Teaching Evolution in Higher Education. *International Journal of Organic Evolution*, 56(10), 1891-1901. <http://doi:10.1111/j.0014-3820.2002.tb00115.x>
- Anderson, W. A., Banerjee, U., Drennan, C. L., Elgin, S. C. R., Epstein, I. R., Handelsman, J., Hatfull, G. F., Losick, R., O'Dowd, D., Olivera, B. M., Strobel, S. A., & Walker, G. C. (2011). Changing the Culture of Science Education at Research Universities. *Education Forum Science Education*, 331, 152-153. [http://doi: 10.1126/science.1198280](http://doi:10.1126/science.1198280)
- Biggs, J. (1996). Enhancing teaching through constructive alignment. *Higher Education*, 32, 347-364. [http://doi: 10.1007/BF00138871](http://doi:10.1007/BF00138871)
- Black, P., McCormick, R., James M., & Pedder, D. (2006). Learning How to Learn and Assessment for Learning: a theoretical inquiry. *Research Papers in Education*, 21(2), 119-132. <http://dx.doi.org/10.1080/02671520600615612>
- Bush, T. (2015). *Centre for Academic Development: External Review of the B.ED (Educational Management)*. Gaborone: University of Botswana.
- Danielson, C. & McGreal, T. L. (2000). *Teacher Evaluation: To Enhance Professional Practice*. Princeton: Educational Testing Service.
- Gopinath, D. (2015). Discourses and Practices in Teaching Methods and Assessment: Insights From an Early Career Academic. *Sage Open*, 1-6.
- Handelsman, J., Ebert-May, D., Beichner, R., Bruns, P., Chang, A., DeHaan, R., Gentile, J., Lauffer, S., Stewart, J., Tilghman, S. M., & Wood, W. B. (2004). Scientific Teaching. *Policy Forum*, 304(5670), 521-522. <http://doi:10.1126/science.1096022>
- Healey, M. (2000). Developing the Scholarship of Teaching in Higher Education: A discipline-based approach. *Higher Education Research & Development*, 19(2), 169-189. <http://dx.doi.org/10.1080/072943600445637>
- Healey, M. & Jenkins, A. (2000). Kolb's Experiential Learning Theory and Its Application in Geography in Higher Education. *Journal of Geography*, 99(5), 185-195. <http://dx.doi.org/10.1080/00221340008978967>
- Hoekstra, A., Brekelmans, M., Beijaard, D., & Korthagen, F. (2009). Experienced teachers' informal learning: Learning activities and changes in behaviour and cognition. *Teaching and Teacher Education*, 25, 663-673. <http://dx.doi.org/10.1016/j.tate.2008.12.007>
- Kolb, A. Y. & Kolb, D. A. (2005). Learning Styles and Learning Spaces: Enhancing Experiential Learning in Higher Education. *Academy of Management Learning & Education*, 4(2), 193-214. <http://doi:10.5465/AMLE.2005.17268566>
- Lammers, W. J. & Murphy, J. J. (2002). A profile of teaching techniques used in the university classroom: A descriptive profile of a US public university. *Active Learning in Higher Education*, 3(1), 54-67.
- Mayer, R. E. (2004). Should There Be a Three-Strikes Rule Against Pure Discovery Learning? The Case for Guided Methods of Instruction. *American Psychologist*, 59(1), 14-19. <http://doi:10.1037/0003-066X.59.1.14>
- Samuelowicz, K. & Bain, J. D. (2001). Revisiting academics' beliefs about teaching and learning. *Higher Education*, 41, 299-325. <http://doi:10.1023/A:1004130031247>
- Spencer, J. A. & Jordan, R. K. (1999). Learner centred approaches in medical education. *British Medical Journal*, 318, 1280-1283.
- Woods, H. B. (2012). Learning and teaching in action. *Health Information and Libraries Journal*, 29, 172-176. <http://doi:10.1111/j.1471-1842.2012.00983.x>