Promoting the Interplay between Teaching and Research in the University and the Role of the Academic Developer

Noluthando Toni (DEd)

Teaching and Learning Centre, University of Fort Hare, South Africa

Cosmas Maphosa (PhD)

Faculty of Education, University of Fort Hare, South Africa
Email: cmaphosa@ufh.ac.za

Newman Wadesango (PhD)

Teaching and Learning Centre, University of Fort Hare, South Africa

Doi:10.5901/mjss.2014.v5n11p19

Abstract

The issue of research-led teaching and learning in universities has revolutionised teaching and learning in universities. In this paper the researchers engage in a critical discussion of the relationship between teaching and research. The researchers advance that a broader understanding should be made on the relationship between the two and outcomes of research should not merely form the content of teaching. The researchers advocate the effective integration of teaching and research in a way that enhances productivity in both aspects. The importance of embracing scholarship of teaching and learning in enhancing both research and teaching is explored. The paper also suggests ways of promoting the teaching- research nexus.

Keywords: *Research. Teaching. Learning. Teaching-Research nexus. Academic development.*

1. Introduction

Traditionally, universities have been viewed as meant to transmit knowledge to students in different disciplines. Teaching and learning in the university, however, should move away from transmitting knowledge to emphasis on knowledge production and application. Griffiths (2004) argues that knowledge production and student learning should be brought together in teaching and learning in the university. Knowledge production is the hallmark of research engaged teaching which the University of Lincoln (2010) defines as:

> *A fundamental principle of curriculum design, where students learn primarily by engagement in real research projects, or projects which replicate the process of research in their discipline. Engagement is created through active collaboration amongst and between students and academics ….*

In this view, learning ceases to be theoretical and students are actively involved in knowledge production by applying discipline-based research skills to solve problems. Students should not be taught to be re-producers and consumers of knowledge but be developed into being knowledge producers.

In ensuring knowledge production in higher education, Waghid (2002) argues for the combining of Mode 1 and Mode 2 forms of knowledge production, which is the disciplinary knowledge and socially distributed knowledge. This shows that teaching and learning in university should not be for the acquisition of knowledge for knowledge's sake but for the solving of community challenges. Teaching and learning in the university should not be divorced from research and this should be research applied to solve community problems.

2. What is Research?

Babbie (1998) defines research as a systematic inquiry to describe, explain, predict and control the observed phenomenon. He asserts that research involves inductive and deductive methods : Inductive methods analyze the observed phenomenon and identify the general principles, structures, or processes underlying the phenomenon

observed; deductive methods verify the hypothesized principles through observations. He further explains that the purposes are different: one is to develop explanations, and the other is to test the validity of the explanations. Gall, Borg and Gall (1996) define research as searching for and gathering information, usually to answer a particular question or problem. In the same vein, Somers (2008) also defines research as the systematic investigation into and study of materials and sources in order to establish facts and reach new conclusions or an endeavour to discover new or collate old facts by the scientific study of a subject or by a course of critical investigation. He further asserts that research is what we do when we have a question or a problem we want to resolve, we may already think we know the answer to our question already, we may think the answer is obvious, common sense even, but until we have subjected our problem to rigorous scientific scrutiny, our 'knowledge' remains little more than guesswork or at best, intuition.

Contributing to the same debate on what research is all about, Venkataram (2010) views it as a systematic process of collecting and analyzing information to increase our understanding of the phenomenon under study. He further asserts that in every research area or subject, our knowledge is incomplete and problems are waiting to be solved. We address the void in our knowledge and those unresolved problems by asking relevant questions and seeking answers to them. Research therefore provides a method for obtaining those answers by inquiringly studying the evidence within the parameters of the scientific method. Woodhouse (1998) also defines research as an intellectually controlled investigation which leads to advances in knowledge through discovery and codification of new information or the development of further understanding about existing information and practice. In other words the goal of research is to develop an informed opinion on a topic. Several authors believe that this goal is only achieved when you have carefully and widely read what others have written on your topic; analyzed, compared and evaluated those ideas; and come up with your own conclusions.

Gall, Borg and Gall (1996) advance that one thing that we have to pay attention to research is that the heart of the research is not on statistics, but the thinking behind the research. How we really want to find out, how we build arguments about ideas and concepts, and what evidence that we can support to persuade people to accept our arguments. They further proposed four types of knowledge that research contributed to education as follows:

1. *Description*: Results of research can describe natural or social phenomenon, such as its form, structure, activity, change over time, relationship to other phenomena. The descriptive function of research relies on instrumentation for measurement and observations. The descriptive research results in our understanding of what happened. It sometimes produces statistical information about aspects of education.
2. *Prediction*: Prediction research is intended to predict a phenomenon that will occur at time Y from information at an earlier time X. In educational research, researchers have been engaged in:
   - Acquiring knowledge about factors that predict students' success in school and in the world of work
   - Identifying students who are likely to be unsuccessful so that prevention programs can be instituted.
3. *Improvement*: This type of research is mainly concerned with the effectiveness of intervention. The research approach includes experimental design and evaluation research.
4. *Explanation*: This type research subsumes the other three: if the researchers are able to explain an educational phenomenon, it means that they can describe, can predict its consequences, and know how to intervene to change those consequences (Gall, Borg and Gall, 1996: 34).

3. The Relationship between Teaching and Research

The core business in any university is teaching, research and community engagement. The relationship and connection of learning, teaching and research is often a case for argument in the academic arena. The link between teaching and research are multiple, diverse, dynamic and discipline-specific (Hughes in Barnett, 2005). Research often takes supremacy over other core functions of the university, in a way that is shown as unrelated to teaching, for example. Teaching and research are often viewed as separate activities with different outcomes (Gibbs, 2002). Similarly, Coaldrake and Stedman (1999) also observe that academics narrowly define teaching and research expectations as separate entities. There should be a close link between teaching and research and students from undergraduate level should be skilled in undertaking research as teaching at such level should be connected and informed by research. The CHEQ, Monash University (2004) states that:

> *… the many ways in which teaching informs research and research informs teaching; this mutually supportive relationship operating to the benefit of both.*

It is, therefore, clear that there should be a symbiotic relationship between research and teaching for the

enhancement of both functions in the university. Scott (2002: 27) states that we should not separate teaching from research or research from teaching as this is tantamount to "trying to separate the inseparable." This view is shared by Deakin (2006: 76) who argues that:

> *…teaching and research are linked together because they are not only seen to be complementary, but synergistic in advancing knowledge and progressing understanding.*

Of importance is the realisation that both teaching and research seek to advance knowledge hence cannot be treated as separate. On the link between research and teaching, Scott (2002:13) observes that:

> *We are all researchers now. . . Teaching and research are becoming ever more intimately related. In a 'knowledge society' all students—certainly all graduates—have to be researchers. Not only are they engaged in the production of knowledge; they must also be educated to cope with the risks and uncertainties generated by the advance of science. The symbiotic relationship between research and teaching as buttresses in the above view cannot be overemphasised. Teaching, as knowledge production, should be done through research and teaching should produce knowledge inquirers who are researchers.*

Teaching should be informed by research and this is research-led teaching. In this view, teaching should focus on research and inquiry skills and it should be designed around inquiry and should be informed by the scholarship of teaching and learning (Baldwin, 2005). Trowler and Wareham (2008) state that in research-led teaching the teacher utilises disciplinary research to benefit student learning and outcomes. In this view, disciplinary research should fit the teaching. Students should also be developed as active researchers. In research-led teaching, academics share their own disciplinary research with students, and teach them disciplinary research methods. When teaching is informed by research, the content taught in modules or courses in universities will be a result of research activities to ensure currency and relevancy of content learnt. In this view, learning ceases to be regurgitation of theoretical knowledge.

Teaching that focuses on research and inquiry is what is often referred to as research-oriented teaching. Such teaching places emphasis on equipping students with skills to create and apply knowledge and is also termed as 'learning to do research' (Healey and Jenkins, 2006). All courses or modules embed research skills to enable students to inquire on issues using scientific investigation methods to come up with solutions. Brew (2006) observes that inquiry-based and discovery learning is made possible if students are part of the scholarly community. This suggests that students should be mentored into researchers by working closely with senior researchers and academics in the university. Baldwin (2005: 7) notes that in research oriented teaching, research methods, techniques and skills are taught explicitly within subjects, courses or modules by stating that:

> *It is important to ensure that undergraduate students gain a thorough and increasingly deep understanding of research approaches (and their limitations) across a program of study. … it is necessary to make sure that when students are learning to exercise these skills themselves they have the underpinning discipline knowledge and skills for this learning to be effective.*

Teaching research skills and ensuring that such skills are mastered and applied in solving disciplinary problems is a strong indicator of the interplay between research and teaching. In research-oriented teaching, therefore, students learn to do research by acquiring research skills within their disciplines and applying such skills.

Teaching that is designed around inquiry is research-based teaching. This approach to teaching stands in contrast to the traditional transmission model of instruction. Research-based teaching involves close interaction between teaching and research and students learn problem-based and project-based initiatives (Ramsden, 2001). In this approach lecturers and students are partners in the inquiry process. This is inquiry-based learning. Wuetherick (2009:1) asserts that:

> *…university teaching is not about only conveying information – it is primarily about teaching students HOW to learn, ask questions and find out answers for themselves – in short, 'research' in some form.*

Research-based teaching allows students to inquire into issues in contrast to passively receiving information from the teacher. Through research–led teaching there should be a close interplay between teaching and research in the university by allowing students to interrogate issues and become knowledge inquirers.

On inquiry-based learning, Barret, Mac Labharainn and Fallon (2005) argue that students pursue their own lines of inquiry, gather evidence to support their ideas as well as master the art of problematizing situations and logically analysing issues to come to meaningful conclusions. Students take charge of their learning by active involvement and

support for each other in exploring issues.

Inquiry-based learning is also evident in problem-based learning (PBL) in which students work to define a problem and this definition of the problem informs the whole learning experience by guiding and directing how students inquire into issues in attempts to solve the problem (Slavin-Baden, 2003). Students use their research skills to inquire into real life issues and suggest solution. In this view, learning is closely linked to real life experiences and empowers students.

Teaching that is informed by the Scholarship of Teaching and Learning (SoTL) is research-informed teaching and in such a teaching approach, curriculum delivery is informed by latest knowledge and understanding of teaching and learning processes. Research into teaching and learning processes assists in improving teaching, learning, assessment, curriculum planning, implementation and evaluation. Griffiths (2004) defines research-informed teaching as teaching informed by pedagogic research. Lecturers inquire and reflect on student learning and all curriculum issues through research and utilise research findings to improve teaching and learning.

4. Scholarships of Discovery, Integration, Application and Teaching

Boyer (1997) in Nibert (2011), proposed an expanded definition of "scholarship" within the professoriate based on four functions that underlie the Profile of a Quality Faculty Member): discovery, integration, application, and teaching. He argues that, within this framework, all forms of scholarship should be recognized and rewarded, and that this will lead to more personalized and flexible criteria for gaining tenure. He feels that, too often faculty members wrestle with conflicting obligations that leave little time to focus on their teaching role. Boyer proposes using "creativity contracts" that emphasize quality teaching and individualized professional development. He recommends that this model be based upon the life patterns of individuals and their passions. Boyer further elaborates the four different categories as follows:

- The scholarship of discovery that includes original research that advances knowledge;
- The scholarship of integration that involves synthesis of information across disciplines, across topics within a discipline, or across time;
- The scholarship of application (also later called the scholarship of engagement) that goes beyond the service duties of a faculty member to those within or outside the University and involves the rigor and application of disciplinary expertise with results that can be shared with and/or evaluated by peers; and
- The scholarship of teaching and learning that the systematic study of teaching and learning processes. It differs from scholarly teaching in that it requires a format that will allow public sharing and the opportunity for application and evaluation by others (Boyer, 1997:67)

Hofmeyer, Newton and Scott (2010) postulate that in the landmark 1990 publication Scholarship Reconsidered, Boyer challenged the 'teaching versus research debates' by advocating for the scholarship of discovery, teaching, integration, and application. The scholarship of discovery considers publications and research as the yardstick in the merit, promotion and tenure system the world over. But this narrow view of scholarship does not fully support the obligations of universities to serve global societies and to improve health and health equity. They argue that the scholarship of discovery, teaching, integration and application should be situated within the inter-professional and knowledge exchange debates.

5. The Scholarship of Discovery

The scholarship of discovery is understood as original research that expands or challenges current knowledge in a discipline. According to Hofmeyer, Newton and Scott (2010), Boyer defines discovery as the creation of knowledge for knowledge sake; its purpose is to contribute not only to knowledge but also to the intellectual climate of academic institutions. Questions asked by scholars of discovery include: What should be known?; and, What has yet to be found? New knowledge is vetted and regulated through peer-evaluation via publications. While this commodity is most important in the merit, promotion and tenure reward systems in the academic institutions, this traditional view of scholarship marginalizes other forms of scholarship and is a powerful disincentive to those who are pursuing tenure and promotion but who are more active in teaching, integration, and applied scholarship. Nibert (2011) asserts that discovery contributes not only to the stock of human but also to the intellectual climate of a college or university. He stresses that new research contributions are critical to the vitality of the academic environment, and that his model does not diminish the value of discovery scholarship. Furthermore, McCarthy and Higgs (2005) advocate that the scholarship of discovery is linked with so many more pedagogical and practical discoveries once the area of expertise and original scholarship has to be taught. Once the student enters the picture, the scholarship of discovery has to become interactive and dynamic, or remain inert

and inaccessible to all but the few students whose intelligence profile is on the same plane as that of the lecturer. If the lecturer is to become a teacher, who transforms rather than informs, and who is inclusive and interactive, then the scholarship of discovery has to leave the traditional realm of "research" and find new directions (Nibert, 2011; McCarthy & Higgs, 2005)

6. The Scholarship of Integration

The scholarship of integration is closely related to the inter-professional debates; it relates to making connections across disciplines and shaping a more coherent and integrated use of knowledge (Hofmeyer, Newton & Scott, 2010). Integration work is creative connectedness, interpretation and synthesis, so is closely related to discovery, but poses somewhat different questions in terms of meaning and impact. According to them, this form of scholarship interprets meaning to isolated facts and creates new perspectives that can answer questions not originally possible to answer. Scholars engaged in integration require innovative thinking to be able to integrate knowledge from different disciplines and create new and different perspectives on significant ideas and theories. Such scholars ask questions that require critical analysis and interpretation such as questioning what the research findings mean and whether it is possible to interpret what has been discovered in ways that provide a larger, more comprehensive understanding (Hofmeyer, Newton & Scott 2010).

Previously located on the margins of academic endeavour, the scholarship of integration is now central because it is definitely best equipped to respond to contemporary problems at both an individual and societal level. Researchers are locating their discovery work, or that of others, into broader intellectual patterns, thus moving beyond the disciplinary silos to build interdisciplinary partnerships with capacity to respond to multi-focal, complex human problems. Moreover, funding bodies are increasingly supportive of collaborative, integrated partnerships and teams as a way to generate knowledge and new approaches.

Integration focuses on making connections across disciplines (Nibert, 2011). Accordingly, one interprets one's own research so that it is useful beyond one's own disciplinary boundaries and can be integrated into a larger body of knowledge. He stresses that the rapid pace of societal change within a global economy have elevated the importance of this form of scholarship. McCarthy and Higgs (2005), Boyer (1997) also support Nibert's sentiments by advancing that the scholarship of integration is serious, disciplined work that seeks to interpret, draw together and bring new insight to bear on original research. Part of this drawing together has to do with making time for lecturers to share and investigate their work. Lunchtimes can be productive meeting times.

7. The Scholarship of Application

In application scholarship, Hofmeyer, Newton and Scott (2010) assert that scholars build bridges and collaborative relationships with other disciplines, decision and policy-makers and communities in order to apply theory to solve every-day problems. Application scholarship directly links other forms of scholarship with practice. This process involves dynamic engagement and the translation of new knowledge in practical interventions that solve problems or improve the difficulties experienced by individuals and society. They further state that this scholarly activity allows dynamic creativity, allows new public policies, allows theory and practice to renew each other and allows "the academic world to climb down from its ivory tower. They believe that scholars engaged in applied scholarship seek to understand how knowledge can be responsibly and ethically applied to consequential problems and how it can be helpful at micro (individual), meso and macro levels (society, government, institutions), as well as seek to learn how social problems themselves can define an agenda for scholarly investigation.

Application focuses on using research findings and innovations to remedy societal problems. Included in this category are service activities that are specifically tied to one's field of knowledge and professional activities (Nibert, 2011). A key point of applying this scholarship is for universities to organise regular seminars and hear how colleagues have applied their expertise in various settings and how these, in turn, have impacted on the discipline itself - how, indeed, practice has transformed theory.

8. The Scholarship of Teaching

The scholarship of teaching must extend beyond simply transmitting information to a process that is also transforming and extending the learning of students and scholars. In this sense, the scholarship of teaching involves stimulating active learning, critical thinking and the commitment to life-long learning (Hofmeyer, Newton and Scott 2010). They further articulate that recent debates have centred on how to differentiate between the scholarship of teaching and teaching

excellence and the relationship of this scholarly pursuit to other forms of scholarship. Moreover, considerable weight is now placed on student evaluations of teaching received which may reflect their personal satisfaction related to grades assigned to their work, rather than the merit of the teaching by the scholar and the curriculum. Also contributing to same debate, Nibert (2011) says that too often teaching is viewed as a routine function and is often not the focus of professional development. Many professors state that they are primarily interested in teaching, but they feel that their institutions do not value or reward excellence in teaching (Borra, 2001). The academic community continues to emphasize and assign high value to faculty members' involvement in activities other than teaching (Royeen, 1999).

According to McCarthy and Higgs (2005), teaching is also a dynamic endeavour involving all the analogies, metaphors, and images that build bridges between the teacher's understanding and the student's learning. Pedagogical procedures must be carefully planned, continuously examined, and relate directly to the subject taught ... knowing and learning are communal acts. With this vision, great teachers create a common ground of intellectual commitment. They stimulate active, not passive, learning and encourage students to be critical, creative thinkers, with the capacity to go on learning after their college days are over. Further, McCarthy and Higgs (2005) advocate that good teaching means that faculty, as scholars, are also learners. All too often, teachers transmit information that students are expected to memorise and then perhaps, recall. While well prepared lectures surely have a place, teaching, at its best, means not only transmitting knowledge, but transforming and extending it as well. In the end, inspired teaching keeps the flame of scholarship alive.

9. How SOTL Enhances Both Teaching and Research

Hubball and Clarke (2010) state that research on teaching and learning and scholarship of teaching and learning may be used to refer to same activity in which research focuses on institutional, curricular and classroom issues. To this end Bernstein and Ginsberg (2009) observe that scholarship of teaching and learning researches into specific issues about teaching and learning by exploring literature, undertaking research and publishing findings. The importance of SoLT is shown by Brew (2001) who sates that it contributes to improved teaching effectiveness, improves student learning outcomes and may ultimately change academic cultures and communities.

Through research into pedagogical issues, teaching is enhanced. This is in line with McKinney's (2007:8) definition of SoTl as "the systematic reflection/study of teaching and learning made public." In this view, academic staff members undertake research in order to understand the nature of teaching and learning challenges and ways to overcome them. Results of research are utilized to improve practice. In the process of research academic improve their research skills and use the results of research to improve teaching and learning. This shows the symbiotic relationship between research and teaching as advanced through SoTL.

Stringer (2007) advances the view that SoTL enabled academics in the university to look, think and act. Looking entails raising questions regarding teaching and learning, thinking involved carefully selecting appropriate research processed and procedures to investigate raised questions whereas acting involves implementing the research results (Stringer, 2007). To this end, teaching becomes a cyclic process of looking, thinking, and acting. Research and teaching become processes that inform and enrich each other.

10. Ways to Enhance Teaching- Research Nexus

In showing the need to promote linkages between teaching and research, Ramsden (2001:4) says:

> *I believe that the main hope for realising a genuinely student-centred undergraduate education lies in re-engineering the teaching-research nexus.*

The above assertion alludes to the realisation that teaching should be informed by research and teaching should be through research and it should produce researchers. Similarly, the University of Sydney (2004) cited by Brew (2006: 43) states that:

> *Research-led teaching refers to initiatives to bring the research and teaching functions of the university closer together. The aim is to enhance students' learning experiences by progressing the ways in which coursework teaching is informed by disciplinary-based research at all levels.*

Teaching should not be separated from research as the two are important when infused in order to enrich students' learning experiences. Graduates with knowledge production attributes are more productive in comparison to those who

lack skills in pursing problems in order to solve them thereby producing knowledge. Garrick and Rhodes (2000) argue that the 'knowledge economy' requires university graduates with research abilities.

Whenever a conversation about the teaching-research nexus occurs, the question that arises is what is meant by the teaching-research nexus? In particular, as such conversations unfold; both academics and students struggle with what is meant by "research" in the context of the teaching-research nexus. Wuetherick (2009) says that the teaching-research nexus refers to any aspect of the interplay between the teaching and research roles of universities, whether at the level of the institution, faculty, department, or individual academic. It is imperative therefore that universities strive to achieve an enriching nexus between research, learning and teaching. According to Wuetherick, the existence of such a fruitful nexus between teaching and research tends to be an article of faith with many academics – that, at higher education level, you cannot be a good teacher unless you are also a good researcher. The extensive literature about the teaching-research nexus includes a range of perspectives on the concept. Boyer's (1990) model of scholarship has been widely accepted by writers as authoritative on the question of the role of both research and teaching (Patrick and Willis, 2009). Boyer's view, thus recognises the value of both teaching and research, as worthy of scholarship, and that they interact with each other within the role of an academic. Neumann (1992; 1996) also found in her qualitative study with senior academics, that research and teaching interact within one role. She found the nexus to be operating at three levels:

- the *tangible* nexus was seen by participants as relating to the transmission of advanced knowledge and skills
- the *intangible* nexus consisted of two processes—(a) the development in students of an (analytical) approach and a (positive) attitude/approach towards knowledge, and, (b) for academics, the stimulation of new thinking (from their students' questions), and clarification of their thinking about their ideas, through having to structure their research concepts clearly
- the *global* nexus refers to the interaction between teaching and research at the departmental level, and to the direction and framework this provides for courses (Neumann, 1996; Patrick and Willis, 2009).

According to Baldwin (2005), there are many ways in which the university's research activity and research culture can permeate teaching and learning. According to particular contexts, academic staff can build the teaching research nexus through approaches that include:

- drawing on personal research in designing and teaching courses;
- placing the latest research in the field within its historical context in classroom teaching;
- designing learning activities around contemporary research issues;
- teaching research methods, techniques and skills explicitly within subjects;
- building small-scale research activities into undergraduate assignments;
- involving students in departmental research projects;
- encouraging students to feel part of the research culture of departments;
- infusing teaching with the values of researchers; and
- conducting and drawing on research into student learning to make evidence-based decisions about teaching (Baldwin 2005).

The research outline above implies not only that there are a variety of ways in which the research-teaching nexus operates, but also that there is a strong relationship with learning. One obvious way in which research is used in teaching is in underpinning curriculum, especially at post-graduate level (Garnett & Holmes, 1995, Patrick and Willis, 2009). Research can be incorporated into teaching to enhance learning in a number of other ways:

- if research findings are disseminated in lectures and tutorials, the intended learning outcomes of the course need to be considered, to ensure that the information discussed is relevant and useful to the students
- research can also provide teachers with a framework for the development of up-to-date course material and research-related projects (Garnett & Holmes, 1995)
- latest research into teaching and learning suggests that actively engaging with content is a way of gaining in-depth understanding of the concepts. An effective way of achieving this is by having students carrying out research (Brew & Boud 1995) or being involved in discussions about the ideas, and thus increasing the "opportunity for enquiry and critique" (Garnett & Holmes, 1995)
- having students (especially postgraduates) engage in research that is relevant to their professional and academic interests is particularly useful in establishing and maintaining links between theory and practice. This helps to keep both teachers and students in touch with industry, professional practice and world affairs (Garnett & Holmes, 1995)

- another approach to linking research, teaching and learning is by students and teachers engaging in collaborative research. This is useful for inducting students into research methods, and for teachers to gain fresh views on research ideas through student questions and discussion. This approach is likely to promote confidence in both student and teacher (Patrick and Willis, 2009).

11. Why strengthen the Teaching – Research Nexus

Brew and Boud (1995:268) in Lee (2007) postulate that:

> *The relationship between teaching and research can never be satisfactorily demonstrated. Learning however is the vital link between research and teaching. It is a shared process in these two enterprises. Learning acts as a powerful intervening factor in all of the studies tempting to demonstrate a relationship between teaching and research since it is the process whereby an individual—teacher, researcher, student, learner—comes to know. This is not to say that research is wholly about learning, any more than facilitating learning is the whole of teaching. But it is the significant and substantial element that they share. Teaching and research are correlated when they are co-related, i.e. when what is being related are two aspects of the same activity: learning.*

The success of these initiatives is still highly dependent upon individual academics' perceptions of the teaching-research nexus and the development their own academic identity. According to Wuetherick (2009) a study of academics at two universities in the U.S. confirmed that individuals with a fragmented academic identity (where the academics perceived their teaching and research roles as separate) struggled with the integration of teaching and research, while those with a more integrated academic identity were far more likely to integrate their teaching and research activities successfully (Colbeck, 1998). Wuetherick (2009) says research has also recently explored other factors related to academics' ability to integrate research and teaching, such as the disciplinary or departmental culture, the research-intensiveness of the institution, or even national research funding policies that enable students to be engaged in working with academics on research projects. He further advances that these studies conclude that academics who perceived a positive relationship between active research involvement and teaching were influenced strongly by the value they place on research as a part of their academic identity, their perception of how students' learning develops epistemological belief systems, how research involvement is used as a teaching method with students, and how departmental/faculty/institutional organization and culture supports (and more importantly evaluates) the link between teaching and research.

12. Conclusions

We can conclude from this discussion that teaching and research in universities are not separate activities. It is unfortunate to find scenarios where either of the two is deemed to be more superior than the other. There is a symbiotic and complementary relationship between research and teaching as the two activities inform and enhance each other. Teaching in the university should be research-led, research-informed and research oriented. In so doing, teaching is informed by research, dome through research and ultimately produces research-conscious and research-able students.

13. Recommendations

The following recommendations are made:

a) Universities should have policies in place to promote the interplay between research and teaching. Such policies should inform processes at all levels of curriculum development, from planning to implementation.
b) Discourse and practice on SoTL should be encouraged in universities. This will allow academics to reflect on their practice and engage in research to improve on practice.
c) Teaching in universities should take a paradigm shift from transmission models to transformative models of instruction. Students should learn by active involvement in solving problems.
d) Staff academic development programmes in universities should come up with ways of assisting academic staff to understand and operationalise the interplay between teaching and research in discipline-specific contexts.

References

Baldwin, G (2005). The Teaching Research Nexus, CSHE, University of Melbourne. www.cshe.edu.au/pdfs/TR_Nexus.pdf. Accessed 10

April 2014
Baldwin, G. (2005). *The Teaching-Research Nexus: How research informs and enhances learning and teaching in the University of Melbourne*. Melbourne: Centre for the Study of Higher Education
Barrett, T., Mac Labharainn, I., Fallon, H. (Eds) (2005). *Handbook of Enquiry and Problem-based Learning*. Galway: CELT
Bernstein, J., Ginsberg, S. (2009). Toward an integrated model of the scholarship of teaching and learning and faculty development. *Journal of Centres for Teaching and Learning* 41 - 55
Boyer, E. L. (1997). *Scholarship reconsidered: Priorities of the professoriate.* San Francisco: Jossey-Bass.
Borra, J. A. (2001). From K-12 school administrator to university professor of educational administration: Similarities, differences, risks and rewards. *Education, 122:* 1.
Brew, A. (2001). *The Nature of Research: Inquiry based Academic Contexts*. London: Routledge
Brew, A. (2006). *Research and Teaching: Beyond the Divide*. New York: Palgrave-MacMillan
Brew, A. & Boud, D. (1995), Teaching and research: establishing the vital link with learning, Higher Education, 29 (3):261-273.
Baldwin, G. (2005). *How research informs and enhances learning and teaching in the University of Melbourne*.UK: The University of Melbourne.
CHEQ, Monash University (2004). http://www.policy.monas.edu/university-glossary.html
Coaldrake, P., Stedman, L (1999). Academic Work in the Twenty-First Century: Changing Roles and Policies. Canberra: DETYA Higher Education Division
Colbeck, C . (1998). Merging in a Seamless Blend. *Journal of Higher Education*. 69 (6): 647-671.
Deakin, M (2006). Research Led Teaching: a Review of Two Initiatives in Valuing the Link between Teaching and Research. *Journal for Education in the Built Environment,* 1 (1) 73-93
Garrick, J. and Rhodes, C. (eds.) (2000) *Research and knowledge at work: perspectives, case studies and innovative strategies.* London: Routledge.
Gall, M. D., Borg, W. R., & Gall, J. P. (1996). *Educational Research: An Introduction.* White Plains, NY: Longman.
Garnett, P. & Holmes, R. (1995), Research, teaching and learning: A symbiotic relationship, in B. Smith & S. Brown (Eds), *Research, teaching and learning in higher education* (pp. 49-57). London: Kogan Page.
Gibbs, G. (2002). Institutional strategies for linking research and teaching. *Exchange*, 3, 8-12.
Griffiths, R. (2004). Knowledge production and the research-teaching nexus: the case of built environments disciplines. *Studies in Higher Education*.29 (6): 709 – 726
Healey, M., Jenkins, A. (2006). Strengthening the teaching-research linkage in undergraduate courses and programmes. In C. Kreber (Ed) Exploring Research Based Teaching (p 45 – 55). San Francisco
Hofmeyer A, Newton, M and Scott, C (2010). Valuing the scholarship of integration and the scholarship of application in the academy of Health Sciences: Health Res Policy System, Vol 5: 23-30
Hubball, H., Clarke, A. (2010). Diverse methodological approaches and considerations for SOTL in higher education. *The Canadian Journal for the Scholarship of Teaching and Learning* 1 (1). http://ir.lib.uwo.ca/cjsotl rcacea/vol1/iss1/1. Accessed 20 April 2014.
Lee, P.L (2007). *Teaching – Research Nexus at the University of South Australia Discussion Draft*. South Australia: University of South Australia
McCarthy, M and Higgs, B (2005). *The scholarship of teaching and its implications for practice*. Ireland: National University of Ireland
Neumann, R. (1992), Perceptions of the teaching-research nexus: A framework for analysis. *Higher Education*, 23, 159-171.
Neumann, R. (1996), Researching the teaching-research nexus: A critical review, *Australian Journal of Education*, 40 (1), 5-18.
Nibert, M. (2011*). Boyer's model of Scholarship*. San Francisco: Jossey-Bass
Patrick, R and Willis, D (2009). *Enhancing learning with research*. Victoria: University Teaching Development Centre
Ramsden, P. (2001) Strategic management of teaching and learning, in Rust, C. (ed.) *Improving student learning strategically*, pp.1–10. Oxford: Oxford Centre for Staff and Learning Development, Oxford Brookes University.
Royeen, C. B. (1999). Scholarship revisited: Expanding horizons and guidelines for evaluation of the scholarship of teaching. In P. A. Crist (Ed.), *Innovations in occupational therapy education.* Bethesda, MD: American Occupational Therapy Association
Scott, P. (2002a) High wire, Guardian Education, 8 January pp. 13.
Scott, P. (2002). Let's stop trying to separate the inseparable. *Exchange*, 3, 27-29.
Slavin-Baden, M. (2003). *Facilitating Problem-based Learning: Illuminating Perspectives,* Buckingham: Open University Press
Somers,H. (2008).What is research? http://www.chssc.salford.ac.uk/healthSci/rem99/resmeth/planning.htm
Stringer, E. (2007). *Action research* (3rd ed.). Los Angeles: Sage Publications.
Trowler, P. & Wareham, T. (2008) Tribes, territories, research and teaching: Enhancing the teaching-research nexus, HEA (www.heacademy.ac.uk/assets/York/Trowler_Final_Report.pdf) Accessed 23 April 2014.
University of Sydney (2004) Academic Board statement on research-led teaching and scholarship of teaching, University of Sydney.
University of Lincoln (2010). *Student as Producer: Research-Engaged Teaching and Learning at the University of Lincoln*, Lincoln: University of Lincoln
Venkataram, F. (2010). *An article to clear up some misconceptions about the nature of research*. India: Indian Institute of Science
Waghid, Y. (2002). Knowledge production and higher education: Towards reflexivity in university teaching, research and community service. *Higher Education* 43 (4): 457 – 488
Woodhouse, D. (1998). Auditing research and the research/teaching nexus, New Zealand Journal of Education Research, 33 (1): 39-53.
Wuetherick, B (2009). Unpacking the Teaching-Research Nexus and its Influence on Academic Practice. Alberta: University of Alberta