A Multi-Disciplinary Approach for Excellence in Research and Teaching and Learning in Higher Education

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Abstract—Higher learning institutions around the world and South Africa, in the past two decades have been moving towards research institutions, aiming for excellence in research (through quality in quantity) which can elevate their status and attract high caliber students and academics. The one side of the coin is such a move by the institutions puts a lot of pressure on academics to increase their research output (assuming high quality) and also bringing high caliber academic associates and if comprehensive institutions, to conduct applied research. On the other side teaching and learning cannot be compromised. What is the point of being a top research institution if the graduation rates decrease? Graduation rates affect status. Is it possible to achieve excellence in both? The solution could lie partially in a way if high quality research is used to improve the teaching and learning which hopefully will increase graduation rates.

At the center of such enterprise is the role of the academic. Is it a one of a lecturer, a researcher, or predominantly the one than the other? Some institutions use all threes. As this is a case study about research and teaching and learning at the University of South Africa (Unisa), an Open Distance Learning (ODL) institution, then Unisa will be the source for developing a model aiming at excellence in research and teaching and learning. What is recommended here is that the academic should become a Diagnostic Action Researcher (DAR). Diagnostic because unless he/ she has a knowledge of the student (background, learning styles, knowledge (related to the subject) and so on) the academic cannot design the appropriate materials and interventions to assist the student. Being a diagnostic academic here pre-supposes that the he/ she possesses all the necessary types of knowledge other than being an expert in their field, for example Pedagogical Content Knowledge (PCK). Action Researcher, because it can be argued that teaching and learning can only be improved by continuous research and follow the Acton Research cycle (plan, act, observe, evaluate, plan,…). Conducting research to improve practice is the aim of Action Research. Research conducted can be of high quality.

One way to produce quality research is through Communities of Practice (CoPs). Communities of practice have been accepted by organisations as way of transmitting, maintaining and creating knowledge. In a knowledge era, the old credo 'knowledge is power' is slowly been replaced by 'knowledge sharing is power'. Experts, experts in becoming, and novices might differ in the amounts of knowledge that they possess on a certain field but they all differ in the tacit knowledge. Very often than not, innovations are initiated by novices perhaps due to the fact that they are not set in their way of thinking. CoPs can be considered as a breeding ground for collaboration, knowledge (explicit and implicit (tacit)) sharing through socialising in a formal or informal way as CoPs are based on situated learning. Through the CoPs where there an expert and a novice (for example an academic who is not familiar with research) come together in a voluntary way sharing a common goal it is possible the novice to become an expert. This paper aims at producing a framework that could be used by institutions of higher learning to improve research outputs and improve teaching and learning.

Keywords—Communities of Practice, Diagnostic Action Researcher; Open Distance Learning, Research, Teaching and Learning.

I. INTRODUCTION

Higher education institutions are faced currently with many challenges due to globalisation, decrease in government subsidies, high student attrition, demands for free education (especially in South Africa since 2015 where in 2016 violent student protests took place), and competition for attracting high caliber students. Furthermore, the move from an industrial era to a knowledge era and the advent of Internet have added to those challenges. Unless they overcome these, it might not be possible to sustain themselves. Higher learning institutions are supposed to aim for retention, transmission and sharing and creating knowledge. It is the thesis of this paper that new knowledge cannot be created without research nor can teaching and learning (T & L) improve. To do that, they have to have high caliber academics, which though, it does not necessarily make them good teachers. It is possible an academic with low qualifications, say a BSc, could be a better teacher than a PhD person. But the PhD person could be a very good researcher. The student is obviously interested in a good teacher (though different students might define a good teacher differently). Both the good teacher and the good researcher are of equal importance as they both contribute to the image and status of a university. But moving beyond goodness we find excellence. Then the aim for a higher learning institution, be it an ODL (or ODeL) or a traditional university should be one of aiming for excellence in both T & L as well as research.

Though this paper concentrates on Unisa, an ODL comprehensive institution that offers both academic as well as vocational education, due to its broadness the study could be applied in other situations as well. One important aspect of a comprehensive institution is that academics in the vocational fields who used to concentrate on practical applications of

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theory, when the two institutions, academic and vocational, merged found themselves in a precarious situation because research outputs were imposed on them. Obtaining higher qualifications was also a prerequisite, while up to that stage a Higher National Diploma was sufficient. These extra demands placed on them did have a negative effect and still does as they are not pro research.

Using the thesis that no progress towards excellence can be made in T & L without systematic Action Research and excellence in research as a rule should be another university objective, then one has to design a system that will achieve these aims. Existing literature concentrates on either research or teaching and learning. This paper will argue that for an institution to sustain itself and decrease attrition rates it can only be achieved through Action Research in the teaching and learning situation thus increasing research outputs while aiming for excellence in teaching and learning. Finally it proposes a model for such endeavor.

II. ODeL Education

Distance learning (DL) has come a long way from as far back as 1840s according to [1]. Rumble [1] identified four phases that DL has gone through which are all related mostly to the available means of technological communication. It started as a correspondence education making use of printed material and postal services which is still practiced to some extent, (although in some cases the postal is replaced in form of electronic mail) even at Unisa. The second phase brought radio (1940s) and two way radios, television (1950s and 1960s) as a means of contact and feedback. The third wave is characterised by the use of multi-media where audio gussets and radio are replaced by video gussets. Then comes the 1980s, the fourth phase, where PCs are becoming more powerful and cheaper with the advent of the Internet bringing a radical change in information and communication technologies (ICT) [1]. That is the birth of online learning. It is a time that traditional universities begun to view online DL not as a low standard provision of education but rather as a means to begin to blend it in their day to day activities.

There have been pedagogical issues involved such as, one way communication, no interaction between the educator and the student, low standard materials, prescriptive rather than collaborative construction of knowledge, teacher centered education and so on. However, on the one hand this was not much different to the provision of education in a traditional way where the student was perceived as an 'empty can' and the professor had to fill that can. ICT and Internet changed all that. Nowadays the gap between ODL and traditional education has shrunk to almost zero. However, each mode of provision has still its own advantages while aiming for excellence in teaching and learning.

A. Government and Institutional Funding of Research

Research can be classified into theoretical (or basic) and applied research. And doing research could be a costly exercise, depending on the type of research. Such funding could come from the institution, the government or from grants from institutions that control research funds which come either from government or from private companies or overseas funders. In South Africa, there is the National Research Fund (NRF) which controls such funding as well as rating of researchers. The government of South Africa having accepted the importance of research allocates annually a sum of money towards research as an incentive for publications.

There are certain criteria that have to be satisfied. For example, papers that are presented in conference carry 0,5 units, journal papers 1 unit, book chapters in recognised fields 1 unit and books (not text books), 2 units. The criteria are that such publications must carry an ISBN number, must be peer reviewed and must be published in recognised by the government journals, or conferences and the books to add value to new research. For projects normally, it is the NRF that funds them. Upon submission of publications the government gives the university a certain sum of money per unit which is divided among the research department (50%), the specific department (25%) and the writer (25%). This can be considered as an incentive for the institution and the writer.

Although theoretical research is considered of equal value to applied research here it is applied research that is suggested. Research in T & L which on the one hand is published (research output) on the other hand it aims at improving T & L thus leading towards excellence. The research on the other hand must be of high quality which also aims for excellence.

B. Action Research

Briefly, there are a number of Action Research models [2],[3] which though share the same basic processes planning (or general plan), acting (or implementing), observing and reflecting (or evaluating and revising the original plan) (see Fig.1) [4]. Action Research was first introduced by the social
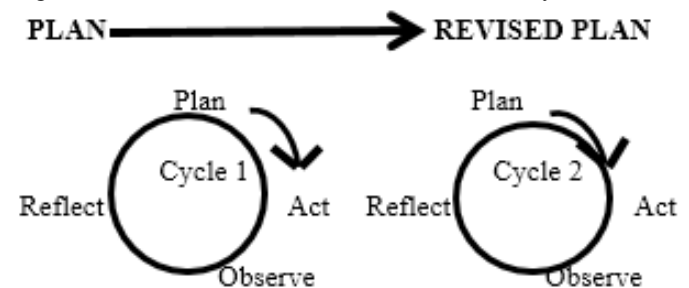

Fig. 1: Action research cycle (Zuber-Skerritt, 1992)

psychologist Kurt Lewin [5]. Lewin's model involves "spiral of cycles", like a spiral staircase or "an action research cycle" as described by [2], [4].

Once reflection is complete the next cycle commences as it is shown in Fig. 1. In the planning phase the researcher decides how to deal with the problem; in the acting phase he/she implements the plan; in the observing phase the researcher focuses on and records what is happening with the group and finally in the reflecting phase the researcher analyses the outcomes and revises plans for the next cycle. What is of interest of [3] model is that he called the first step diagnosing. That is the teacher should be a diagnostic teacher which is more than being an assessor. He/ she should be a diagnostic teacher

who is defined very well by [6].

For [6] a diagnostic teacher is the one "who casts oneself as an observer, scrutiniser, and assessor, as well as an engaged teacher." With respect to assessment, [6] though suggested that assessment should be done in three domains.: (1) seek to know students' current understandings and misconceptions; (2) deepen their own subject area knowledge and choose what is worth teaching; and (3) assess their own beliefs and practices, selecting, designing, and redesigning appropriate pedagogical strategies [6]. Giannakopoulos and Buckley [7] modified the role of the teacher in modern times as a diagnostic action researcher [DAR]. And this paper accepts that role as a prerequisite towards excellence in T & L.

C. Academic Research

Whatever the role of an academic is, it must be well documented. This is perhaps where the first hurdle is towards excellence. From an institution's perspective, if there is such a detailed document it could 'chain its hands' not to be able to employ the academic beyond his/ her job description. This happens more often than is reported in universities. For example, a lecturer can resign or be dismissed with immediate effect and leaves behind a vacuum. That vacuum has to be filled as soon as possible else the students will be without a lecturer. That will be extra work for the lecturer. From a lecturer's perspective, not having a well-designed system which carries some quantitative measurement he/ she can always argue that he/ she is 'drowning in work'. There are a number of software packages that exist which can quantify the work of an academic and have been used by some departments (e.g. University of Johannesburg (UJ) where the writer taught for 22 years) which worked quite effectively. When the same recommendation was made to the present university that the writer is employed, both academics and management rejected it for different reasons. The basic idea was to introduce a new system where one would have been predominantly a researcher or a lecturer. So teaching or the research components would have been proportionally determined. That is it would have been possible to divide the time of work into (say) 10% teaching and 90% research or the other way around thus one would have different proportions for teaching and research adding to 100%.

In order to overcome this hurdle, performance management systems came into being. Such system contains the various KPAs, performance indicators, such as teaching and learning, research (divided into two categories, with a doctorate and without doctorate) academic citizenship, community engagement and mentoring and skills transfer (if the academic is older than 60 years old). These five KPAs can carry different percentages and there is a minimum and a maximum. The percentage is agreed upon by the line manager and the academic at the beginning of the year. The only KPA that is quantitatively measured is research. The reason being that it is about research output in form of units such as supervision of Masters and Doctorates, presenting papers in recognised by the government conferences, journal papers, book chapters and books. It excludes externally funded research for innovation in

technology and sciences as this contributes to patents or global research. If one excludes the research and perhaps mentoring, the others are highly subjective. If maximum is 5 at the end of the year, a 4 that the academic could have given him/ herself the line manager could say. 'No it cannot be 4. It is 3,5 or 3,4' or whatever less than 4. That is highly subjective, not that the 4 the academic gave him/ herself is less subjective as there are no quantitative criteria. Therefore, one cannot use a performance management system for a just and fair evaluation of an academic. That becomes the next barrier to T & L and research excellence.

Does passion for research and T & L play a role in achieving excellence?

This could be more of a philosophical question rather than a pragmatic one. The problem is that passion, a psychological or rather an emotional state, cannot be measured. It is like trying to answer the question of a young child: 'How much do you love me?' A very good indicator to see how much research has been done on this, one can do a search on Google. The first page is about individual experiences about passion for research or for any other type of work. To my 'horror' the next page is not different. So I gave up. Well if that is the case, where individuals express their views on their passion there is no valid reason as to why can I not do the same. Then you Google, 'what is passion?' (not the dictionary's definition) and you come across 7 or 8 ways to … find your passion. Based on these two examples we can safely say that passion is something that goes beyond knowledge which can drive one's thirst for knowledge (or some other human cognitive or physical activity) or gain knowledge through doing research. Passion can be connected to inspiration with a lot of 'perspiration', the desire for high achievement. Assuming one could measure passion, would one prefer a lecturer with a lot of passion and sufficient knowledge of his/ her subject or a professor that might lack passion? That is a question for another discourse.

It is accepted by the writer that passion plays a central role in excelling in T & L or in research or (if possible) in both, the ideal situation.

D. Excellence in T & L and Research

This paper concentrates only on excellence in research done by academics in view of improving their practice. This implies Action Research. Defining excellence in T & L and/ or in research can be very problematic. If we look at a criterion for quality research, originality, which has made some impact, is accepted such a criterion. When it comes to Action Research it can be argued that such impact cannot be measured, let us say, after the first cycle (see Fig. 1). It is equally possible that it might even have a negative impact. Therefore provided that the research on T & L satisfies scientific research methodologies then such research should be recognised as a first step towards solving a problem. If the problem is attrition, such a problem is a wicked problem (a problem which has almost no solution) because research done on attrition in the past 50 years has not made a significant difference on attrition rates. For example if we compare research on attrition in the early 1990s [8],[9],[10]. In 2016 [11] found that even though a lot of money has been

spent to improve attrition rates, the return on investment is almost insignificant. Therefore if a teacher becomes a Diagnostic Action Researcher could only improve attrition periodically but he/ she keeps adding new knowledge into the problem's solution.

The premise here is, therefore, that a Diagnostic Action Researcher who conducts research on his/ her subject applying universally scientific methodologies of research is aiming for excellence. The research output which should be peer reviewed and made public in form of presenting papers nationally and internationally or sent to recognised journals or in book chapters or even combine various publications into a book form should be recognised as steps towards excellence. Peer reviewing has been accepted as one way of evaluating the quality of research.

III. A MODEL TOWARDS EXCELLENCE IN T & L AND RESEARCH IN AN ODL SETTING

In order to conduct research, that could involve as many Colleges/ departments of an institution as possible, there has to be a common problem. In this case attrition is such a problem. If an ODL institution like Unisa has been in existence for a century plus, then one must accept there is a certain established organisational and academic culture. Such culture will not necessarily be of collaborative nature. A common problem, recognised by most, should encourage not only collaboration

but also the formation of Communities of Practice, which sharing of knowledge in a collaborative manner, towards achieving a common goal, is its essence. To start such a project there must be a unifying title of such a project and someone has to take the initiative and promote the idea to as many Colleges/ Departments as possible. At Unisa, the writer started such a project, Project 2020, under the title, "A longitudinal study into academic interventions and student successes in an ODL university" which is planned for an initial 5 year period and hopefully it will continue for ever!!! What is also important about this project is the initial groundwork has already been established by [12] for Unisa.

This longitudinal study is of a very broad scope since it can be used for institutional as well as for multi-disciplinary research. Fig.2 illustrates the model. Briefly, the problem common to the various fields of the institution is identified by a project leader. The leader, since he/ she is specialist in the field that the problem lies develops the background to the study and gets the necessary ethical clearance. Then the leader goes on a road show and promotes the project and also acts as an advisor to various College/ Departments. In the advisory capacity, he/ she suggests ways to approach the problem and through collaboration the College/ department begins to take ownership of the project. Within the discipline, there are various subjects that are offered at various levels.
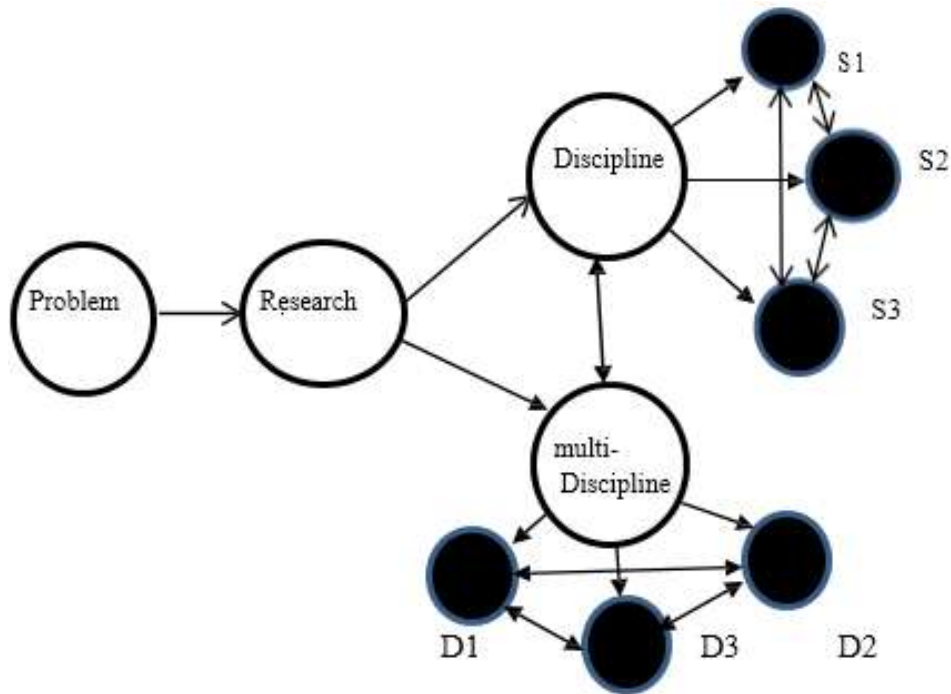

Fig.2: A research model for inter-disciplinary and multi-disciplinary research

Some subjects could be offered once off or could be major subjects that are offered up to the final (probably 3rd year) level. If a subject is offered in more than one level then a collaborative research can take place among those lecturers. The formation of Communities of Practice should be encouraged among

lecturers within a discipline as well among the different disciplines. Sharing of results and knowledge gained forms the essence of the collaboration.

The model also indicates the various factors that affect academic success and they could be analysed using Structural

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Equation Modeling (SEM). The results then will inform the various collaborating groups for the next cycle of research. What is described here is the ideal situation which implies that there could be barriers and enablers towards such research. A key word that is used for such a multi-disciplinary research is, voluntary participation, another criterion of the Communities of Practice. The researcher has to see the benefits of such research to his/ her career. If it is imposed on the academics it will appear that the institution interferes with their professionalism.

After the launching of Project 2020, already research has started in the School of Computing in programming, as it has been identified as a risk subject where the throughput rates are around 30%. Applying such a model and using Action

Research where the lecturer is a Diagnostic Action Researcher could lead towards excellence in T & L as well as research.

IV. CONCLUSION

This paper tried to make a contribution to applied research in education and at the same time in research output and how can applied research be used in order to aim for excellence in research and teaching and learning by using Action Research to improve teaching and learning. Study of literature revealed that research and teaching and learning were treated as separate entities. Although Action Research aims at such improvement, emphasis had been placed on improvement of teaching and learning and not on both research and teaching and learning.

Research output on the one hand, improving pass rates in their subjects on the other, many academics who make up the majority in teaching and learning section to a greater or lesser extent (only a 5% concentrate 100% doing research and post graduate supervision) research output could be more of an obligation rather than voluntary endeavor. Since research output is also one of the criteria for promotion, academics are under greater pressure. This scenario is observed worldwide. There is no argument in that research should play a central role in creation of new knowledge which contributes to the status of the university. But at the same time so does graduation rates and the quality of graduates which contribute towards a competitive advantage and sustainability of the institution. Therefore, although this study is limited on a particular ODL institution, its broadness could be used by other institutions, not just ODL but also traditional institutions.

Using an inter-disciplinary as well as a multi-disciplinary collaborative approach to aim for excellence in research and T & L could only lead to improving graduation rates and research outputs through Action Research. Voluntary participation and passion for one's career (not job) in institutional research, under a common goal, is a breeding ground for Communities of Practice where sharing of knowledge dominates (under the banner, 'knowledge sharing is power' and not 'knowledge is power'), it can only lead to a satisfied academic, department, College and subsequently student and institution.

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