A Systems Approach to the Teaching/Research Nexus as Applied in a Mixed Mode Research Module for BTech Journalism

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ABSTRACT
This paper suggests a tentative answer to an old debate, namely the nature of the connection between teaching/learning and research, and the extent to which they are mutually (if at all) supportive. While existing literature in the field provides inconclusive results, it is the contention of this paper that any commonalities between teaching/learning and research lie in the systemic underpinnings of both processes. These common features, it is proposed, can be summed up in an interactive principle developed in doctoral research and applied in a mixed-mode Research Module designed to develop research capacity at Bachelor of Technology Level. The paper thus offers a systems approach to the teaching/research nexus, which will be explored with reference both to the theory developed in doctoral research on written communication and application of the theory in mixed mode course design.

Keywords: teaching/research nexus, systems approach, blended learning, modelling, critical realism.

1. INTRODUCTION
While the connection between teaching/learning and research presented in this paper was in fact a by-product of other projects (i.e. doctoral research into written composition and case studies on blended learning), it is in fact germane to the context in which this paper is set, namely the emergence of a developing multicultural University of Technology (UoT) in KwaZulu-Natal from out of the merger of two vocational colleges, M.L. Sultan Technikon and Technikon Natal. To achieve the status of a university in the eyes of the Department of Education, the Durban University of Technology (DUT) must increase staff qualifications as well as higher degree (i.e. MTech and DTech) registrations exponentially in the next four years. The connection between quality teaching and research is then not an entirely academic matter but one of vital importance for the fledgling university, particularly when its population is not only multicultural - and multilingual - but when 75% of its students could be termed “educationally disadvantaged”. As Research Co-ordinator for the Faculty of Arts and Design, hitherto more valued for the publicity achieved by its creative artefacts and performances than its formal research output, the author is involved in research capacity building at all levels, using ICT in both research administration and academic programmes wherever possible both to avoid burnout and to fast-track staff and student progress. One such ICT application was a mixed mode Research Module for BTech Journalism students, developed in 2007. This paper will suggest that this course not only acknowledges but also exploits the connection between teaching/learning and research, in being underpinned by a systemic model of functions common to both.

2. APPLYING A SYSTEMS APPROACH TO THE TEACHING/RESEARCH NEXUS
This section will first look at a summary of some key findings of research into the teaching/research nexus, and then look at the systems approach applied in this paper.

The Teaching/Research Nexus
Jenkins [1] sums up past research results on the connection between teaching and research as follows: that, while many academics - and universities - emphasise the value of research to student learning, this allegedly close positive relationship is not supported by most of the research evidence. The latter, he points out, is largely statistical, and is therefore unsatisfactory in probing the underlying causes. Jenkins continues: “recent research has demonstrated that such positive linkages can occur but they have to be purposefully created by individuals, subject groups, institutions and national systems” ([1], p. 23). He concludes his summary by saying that the extent to which academic staff in higher education should be involved in research is an issue for urgent debate. Bostock [2] confirms Jenkins’ assertion that statistical studies have been of little use in clarifying the teaching/research nexus, and adds that transmission type teaching and result-oriented research offer little scope for interrelationship. This is supported by Zubrick, Reid and Rossiter’s suggestion that studies which fail to find any connection between teaching and research “may well be related to empiricist assumptions that still shape research approaches and restrict insights into the nexus” ([3], p. 17). By contrast, Bostock holds that “wherever academics see research as fundamentally about shared knowledge, learning and communication there are many more similarities and positive relationships” ([2] p. 1). This sentiment resonates with Brew’s statement that, when “research and teaching are both viewed as founded on a traditional empiricist framework, the relationship is always problematic”; she continues, “If, on the other hand, knowledge is seen as product of communication and negotiation, the links between research and teaching are quite different” ([4], p. 150). It seems likely that the practice of “inquiry led-teaching” as Wood [5] suggests, can lead to synergies being developed between research and learning in emphasising the discovery aspect common to both processes. Yet Brew and Boud [6] assert that the relationship between teaching and research cannot be satisfactorily demonstrated. They do, however, view learning as the common process shared by both teaching and research:
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 attempting 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 and correlated when they are co-related, i.e. when what is being related are two aspects of the same activity: learning ([6], p. 268).

This paper reinforces Brew and Boud’s emphasis on the connection between learning and research processes in that they can both be viewed as being underpinned by the same system of functions. Even transmission mode teaching can be accommodated within this view if one accepts a definition of learning as the “social construction of knowledge”, given that knowledge can be constructed in rote learning of content, and that research, at its most sterile, can also involve transmission of content. However, this paper challenges their assumption that that the relationship between teaching and research cannot be satisfactorily demonstrated, and will attempt to do so by showing that both processes are informed by a common system of functions.

The Systems Approach Used in this Study
While systems approaches are typically associated with the hard sciences, the systems approach described here was developed for social science research into communicative processes, working within the critical realist philosophy [7] and using Franck’s modelling process [8]. Critical realism works towards emancipation by giving participants an understanding of the “essences” of processes, so that the deep structures or “mechanisms” which drive events can be separated from their often confusing surface manifestations (i.e. the “epiphenomena” focused on in phenomenological enquiries, as in Brew’s 2001 account, see [4]). Understanding, of course does not automatically result in empowerment, but does afford participants more options. Meehan’s pioneering work in the 1960s defined a systems approach as follows: “A system explanation can be viewed as a formal pattern, a map, that can be imposed or overlaid on the empirical world. If the pattern fits the empirical data, it serves as an explanation or guide to the empirical events that fall within the pattern” ([9], p. 63). Working from Meehan’s explanation, and commenting on the work of twelve researchers developing systems models in various disciplines, Franck derived a system of modelling (i.e. a type of meta-theory) which explained how systemic patterns could be uncovered in a wide range of natural and social phenomena:

1. Beginning with the systematic observation of certain properties of a given social system, (2) we infer the formal (conceptual) structure which is implied by those properties. (3) This formal structure, in turn, guides our study of the social mechanism which generates the observed properties. (4) The mechanism, once identified, either confirms the advanced formal structure, or indicates that we need to revise it ([8], p. 295).

The System Underpinning Communicative Interactions
My doctoral research involved the formulation of a systems model of communication [10] in written mode for use as the basis for a writing tutor program. Franck’s modelling process was used to hypothesise a system of communicative functions or “theoretical model” underpinning the various communication modes. The modelling process used reverse engineering, or classical induction, to arrive the system of functions underpinning the social process. According to Franck, the formal aspect of a social mechanism is encapsulated in the system of functions “without which” the social process cannot take place, and the applied aspect takes the form of an empirical, or applied model. The theoretical model can be validated by means of the empirical model, which is tested out against the actual social functioning of the process. As shown in Fig. 1, the model of communication thus formulated comprises a system of contextual, interactive, ideational, social and reflexive functions. The prerequisites for communication to take place (i.e. successfully) are that it must be contextualised, which frames and drives the interaction; it must involve some form of interaction (if only intra-personal or by proxy); which generates ideational content; content in turn must have social sanction; and the whole process is regulated by the reflexive function, much in the fashion of a feedback loop. Franck terms this type of system the “architecture of functions” which forms the theoretical model of the phenomenon being investigated. According to Bhaskar, a theory is “a model conceived, and meant to be taken as true; i.e. a model in which the entities posited and mechanisms described are conceived as real” ([7], p. 192). The system of communicative functions thus formulated is then a true theory, or model with existential commitment, as the functions can be observed to be carried out in actual instances of communication.

Extrapolating the System of Communicative Functions to Other Processes
So far the system of communicative functions has received some peer acceptance in journals and proceedings as a generalisable principle ([8], p. 286) which can be used not only as the basis for communicative interactions but also for course design and research processes (see Fig. 2). The theoretical model of communicative functions provided the basis for three empirical - or applied - models, namely, of written communication blended learning delivery and research.
All three models have implications for the teaching/research nexus, as exemplified in the course design of the mixed mode research module described in this paper. In my research into academic writing I initially experienced difficulty separating out writing from both learning and research processes: one would expect these processes to be intertwined in academic writing, but they appeared to be inextricably so. The realisation that the interactive processes in writing were similar to those involved in learning went some way towards explaining the relationships involved, but it was only when this was compared with the articulation of the research processes (as in the Research Module) that it became clear that the system of communicative functions underpinned research processes much in the nature of an interactive principle. The interactive principle, then, offers a theoretical basis for the identification of synergies between research and more interactive modes of learning, as mentioned earlier (i.e. in [2], [4], [5], [6]).

3. THE BTECH RESEARCH MODULE FOR JOURNALISM

The BTech Research Module for Journalism, which is part of the Basic Research Course for Journalism, provides an example of the harnessing of these synergies in mixed mode course design. The module follows the andragogical model of learning described by Pellone [12], giving learners far more autonomy than is usually allowed to novice researchers within a scaffolded framework offering ongoing guidance, structure and support [13]. The course can also be made more directive (i.e. “pedagogical”) dependant on learner needs which are monitored throughout the course. The “live” (i.e. lecture room) delivery of the course is carried out in after-hours workshops and seminars, which not all students are able to attend regularly, owing to the nature of their profession. The online delivery is via a Moodle course with procedures and minimum content [14], and fits Mason’s Type C course, or the “Integrated Model” [15]. The course units (Tab. 2) are staggered in the cyclical pattern typical of the recursive research process, but structured so that the tasks increase in complexity and scope while integrating the learnings of previous tasks [16]. Student work is rated by a combination of formative [17] and summative assessment. Forum discussion is used as both an assessment tool and for public display of student work. The course is outcome- and project-based, and makes use of experiential learning. Course content is minimal, and is used primarily to give novice researchers direction and guidance; most of the resources are added by facilitators, supervisors and students during the course. This is because the “course content” is really the research process itself, modelled in the tasks which learners work through in the course of formulating and writing up their research proposals. While most of the above elements are recognisable as features of best practice in blended learning, it is the contention of this paper that it is the systemic nature of the course design (and operation) which has made the course design effective, and not an assemblage of various best practices.

All three empirical models derived from the interactive principle (i.e. system of communicative functions) can be found in the design of the Research Module (see Fig. 2). The model of written communication offers insights into the nature of hypermedia communication, showing how the nature and extent of the distancing involved in communication are more significant factors than synchronicity or asynchronicity, suggesting that this so-called “dichotomy” is not only simplistic but misleading when applied to writing or electronic communication ([10], pp.710-713). The course design principle on which the Research Module is based is contained in Gutteridge’s [18] model of blended learning delivery. The course tasks are structured around a practical model of research processes (which is also supplied as a “map” for students to follow).

3.1 Communication, Learning and Research

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for communication, learning and research processes, that is the functions “without which” all three processes cannot take place. Tab. 2 shows which functions are emphasised in the various module tasks at all levels, that of research processes, online and offline communication, and individual learning.

<table>
<thead>
<tr>
<th>Research Module Tasks</th>
<th>Contextual</th>
<th>Declarative</th>
<th>Interactive</th>
<th>Social</th>
<th>Reflective</th>
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<tbody>
<tr>
<td>1. Orientation session</td>
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<td>2. Introducing yourself</td>
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<td>3. Preliminary survey of area/field</td>
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<td>4. Statement of research intent</td>
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<td>5. Detailed survey of other research</td>
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<td>6. Narrowing scope of research</td>
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<td>7. Compiling a bibliography</td>
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<td>8. The research problem cycle</td>
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<td>9. Theoretical framework</td>
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<td>10. Choosing the research methodology</td>
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<td>11. Requirements for the project</td>
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<td>12. Finalising choice of research topic</td>
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<td>13. Writing up the research proposal</td>
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<td>14. Oral presentation on research topic</td>
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Table 2. The Functions Emphasised in Different Research Module Tasks

4. CONCLUSIONS

It is the contention of this paper that the success of the Research Module was not just the result of using a blended learning approach, but of using a course design informed by an interactive principle common to research, learning and hypermedia communication [11]. Students using the module appeared to have less trouble in choosing an appropriate research project, as, from the start, they were encouraged to pursue their own interests, and the staggering of the research tasks in recursive cycles encouraged them to explore topics at their own pace. They were also better able to distinguish between local conventions and common features of the research process, as the systemic modelling process underpinning course design had meant that these distinctions could be reflected in the course. Because the topics had intrinsic interest for the students and were articulated and clearly delimited relatively early on in the course, successful completion of research projects was fuelled by personal passion as well as thorough preparation: morale was sustained by the highly interactive nature of the community of practice set up online. Students were not afraid to tackle challenging projects, as these had been properly delimited by the repeated cycles of reflection offered in the course (see Tab. 2). As a result, many interesting projects resulted, such as the social impact of Kwaito music, Press reporting on the ANC succession race (i.e. between the current President, Jacob Zuma, and his predecessor, Thabo Mbeki), and the authenticity and authority of online journals.

While course effectiveness cannot be measured in terms of examination results only, throughput is a crucial issue for both students and the institution, and it was very reassuring to find that there was a significant improvement not only in the Research Report marks of the BTech Journalism group in 2007, but also in the overall Basic Research Course results compared with the results of the previous year. There was a significant improvement on the results obtained in 2006 with the same set of Examiners and Moderators, when a traditional lecture/workshop approach was used; at that time only five out of ten students completing the course passed, with the highest mark being 61%. All ten out of the students completing the course in 2007 passed, although two submitted their reports after the deadline had expired, and were obliged to repeat the course the next year. Four students achieved marks over 61%; the highest mark being 71%. These marks become more significant when viewed in the perspective of the fledgling university’s multicultural and multilingual student population, of which 75% could be termed “educationally disadvantaged”, as mentioned at the outset. When the Research Module was used in the newly introduced BTech for Television, three distinctions were obtained the first year the course was run, despite the lack of a tradition of previous research - and hence, student exemplars - at that level. In view of its success, the mixed mode Research Module, which is considered to be generic in modelling research processes, has been adapted into a multi-disciplinary course for MTech and DTech students.

5. REFERENCES


