Examining the Link Between Research and Teaching in UiTM

Kamisah Hj Ariffin
Nazirah Ramli

ABSTRACT

It has been a widespread view that research and teaching are inextricable linked. Justification on this link has been made based on the ascription that research has beneficial impacts on the process of teaching and learning. However, this paper has illustrated that such claim has been broadly made and not at all conclusive. The analysis on the research carried out by the academics in Universiti Teknologi MARA (UiTM) Pahang shows that there are three possible links between research and teaching: positive or complementary, negative or conflicting, and zero or null. This suggests that the interaction between research and teaching needs to be evaluated and reasoned so that academics would be able to consider the link before undertaking any research activity so as to make the research valuable and meaningful for the teaching and learning processes.

Keywords: *negative link, positive link, research, teaching, zero link*

Introduction

The reality in higher education is now changing to meet the challenges in the era of globalisation. Universities are now focusing on research as it has become central to both social and economic performance in its value for knowledge and innovation. As put forward by Ibrahim Ahmad Bajunid (2002) on the importance of research in producing a k-society,

> *'A society cannot be truly a knowledge society when the society is predominantly a recipient society, receiving and borrowing other people's knowledge and inventions'.*

Along the same line, Drucker and Nakauchi (1997) have asserted the significance of research for innovation. They claimed that research is

needed as

> *'Innovation is not possible while one remains trapped within the hard shell of conventional wisdom'.*

In a university context, it has been a widespread view that research and teaching are inextricable linked. Justification on this link has been made based on the ascription that research has beneficial impacts on the process of teaching and learning. However, empirical evidence has illustrated that such claim has been broadly made and not at all conclusive. Studies have shown that there are three possible links between research and teaching: positive or complementary (Centra, 1983), negative or conflicting (Friedrich & Michalak, 1983) and zero or null (Bohart & O'Toole, 1980). It seems that the first link has always been stressed upon while the other two are often ignored.

Like any other universities, Universiti Teknologi MARA (UiTM) has also placed significant importance of research on its academics. In fact, research has been included as one of the university's strategic planning in its aspiration to be recognised as a world class university. Incentives have been offered in many forms such as rewards, recognition and bigger chances of getting the promotion to realise this strategy. Such policy seems to have been very effective in promoting research activities among the lecturers. However, this raises an important question: to what extent are these research positively linked to teaching?

This paper examines the link between research undertaken in UiTM Pahang and teaching. The link is made based on the three links (positive or complementary, negative or conflicting and zero or null) as described by the literature of the empirical studies. The interaction between research and teaching needs to be evaluated and reasoned so that academics would be able to consider the link before undertaking any research activity so as to make the research valuable and meaningful. The term link and relationship will be used interchangeably in this paper.

Research and Teaching – A Definition

Before any discussion can be embarked upon the link between research and teaching, we need to look at what it means by these two and the activities that are involved.

Collier (1998) has given quite a comprehensive description of research. In addition to the notion that research aims at finding answers to a problem, it encompasses the following activities:

- discovery, dissemination and interpretation of new knowledge;
- reinterpretation of existing bodies of knowledge;
- the application of principles from existing bodies of knowledge to modeling and design; the invention of ideas, images, performances and artifacts including design, where these lead to new or substantially improved sights;
- the use of existing knowledge in experimental development to produce new or substantially improved materials, devices products or processes, including design and construction; and
- reflection on current practice by practitioners.

(Collier, 1998, p.1)

Most research done by academics are either disciplined-based or enquiry research. Discipline-based research is carried out in a discipline chosen by the researcher based on his or her personal interest or focus area. The extensive research done in the discipline enable the researchers to become content experts in the chosen area. Enquiry research, on the other hand, is a search for knowledge. As it also searches for answers to questions, it is also a kind of problem solving. Examples of enquiry research include nature study, problem solving and opinion poll study.

Teaching is defined as the process of transferring and facilitating knowledge. However, teaching does not merely refer to the act of transferring the knowledge only. On the lecturer's part, it involves a series of activities involving planning, implementation and evaluation. Meanwhile, on the students' part, it involves knowledge acquisition.

Both research and teaching are needed in a university context. The former is the knowledge while the latter is the tool of transferring the knowledge. According to Collier (1998), the quality of teaching can be achieved through sound and relevant research. Thus, research and teaching should link so that quality and effective learning can be achieved.

The Link between Research and Teaching

There has been a considerable amount of studies looking at the link between research and teaching. As mentioned earlier, three possible links can be made between these two. The following section describes these three links.

Positive or Complementary Link

There have been many contentions conferring the benefits of research upon teaching. This positive link is attributed to the development of knowledge to be imparted to students, the credibility of the lecturers and the transfer of skills to the students.

First, research can provide students with the latest developments in the specific field. The findings of a research can clarify, update and amend the content of textbooks which may not be current in certain rapidly developing areas like science and technology. Lecturers who are aware of the latest development in the field can either inform or become the point of reference for their students. Neumann (1994) in her study in an Australian institution found that when lecturers were involved in research, students felt that their courses were up-to-date and the lecturers were interested in what they were studying.

Second, research can enhance the credibility of the lecturers. Successful research can increase lecturers' knowledge and expertise in their field. As claimed by Elton (1986), the link between teaching and research lies in scholarship, or the re-interpretation of existing knowledge. By doing research, lecturers can be fully aware of the knowledge and able to interpret it to students. This can increase their confidence which, in turn, can lead to better classroom performance. Students, too, will be more interested and enthusiastic in learning from people renowned in their fields. As Neumann (1994) has observed, students claimed that they enjoyed their study because the lecturer was at the forefront of knowledge.

In addition, those who have undertaken the research themselves may become more critical and active in presenting the topics rather than accepting whatever is being presented in the literature passively. Moreover, lecturers will be able to present authentic materials from their very own research in their teaching. Students will be able to relate themselves to real research rather than reviewing and discussing only the works done by others from the textbooks.

Negative or Conflicting Link

It has also been contended that there is more to quality teaching than merely engaging in research. The impact of research on teaching is largely determined by a myriad of factors, ranging from the type and quality of the research itself to the degree which one is at cutting edge of the field.

Studies have shown that research, especially the specialised ones, can affect the most general and basic courses negatively (Vidal & Quintanilla, 2000). It is a fact that research is specialised. Thus, lecturers may distort the curriculum by focusing on a specialised area while paying less attention to the others in the curriculum. As attested by Neumann (1994), 'many students were also critical of subjects in which a teacher's individual research and research interests were seen to dominate, particularly at the expense of the aims of the course' (p. 335).

In addition, lecturers might teach their classes at a higher level. As a result, students at a lower level may suffer. As put forward by Vidal & Quintanilla (2000), there could be a positive link between research and teaching at higher levels of teaching where courses tend to be more specialised in comparison to more modest association at undergraduate level. This is supported by the Ontario Council on University Affairs (1994) that there is little functional interaction between undergraduate teaching and discovery research. In fact, Astin (1993) in his study over 200 institutions in the US found that 'a college whose faculty is research-oriented increases student dissatisfaction and impacts negatively on most measures of cognitive and affective development' (p. 363).

A research can also be negatively related to teaching when the former is prioritised over the latter. With limited time and energy, there will be increased pressures for academics to commit themselves to both teaching and research. Hattie and Marsh (1996) in their study, for example, found that time spent on research is not related to quality of teaching. In fact, they observed that there appeared to be a tension between the times devoted to research and teaching, thus, concluded that

> *'the common belief that research and teaching are inextricably entwined is an enduring myth. At best, research and teaching are very loosely coupled'* (p. 25).

In addition, Jenkins et al. (1988) reported that research could distort teaching as it reduced the availability of the lecturers when they are preoccupied with research. This is because research collaboration with external institutions usually requires travelling and doing fieldwork. Thus, even if a research is successful, teaching may suffer.

Zero or Null Link

While research can be considered as the cornerstone for discovery and dissemination of new knowledge, it does not always, however, complement teaching. For example, if a research is not a disciplined-based one, it can only contribute to a body of knowledge. It does not have any

impact on teaching, nor having any significant link to the curriculum. Thus, the research will only be beneficial to interested parties rather than the students.

Of late, lecturers-cum-researchers have been urged to carry out research collaboratively with funding agencies. If research is funded by external agencies, the focus will be more on satisfying the interests of the agencies, rather than to the teaching needs. Unlike teaching, research is seldom driven by curriculum considerations.

Thus, although the research findings may contribute to the latest innovation, it may also result in the incompatibilities with the classroom needs. This leads to zero relationship between research and teaching.

Examining the Link between Research and Teaching: A Case of UiTM Pahang

The number of research registered with the Unit of Research, Development and Commercialisation (URDC) in UiTM Pahang has increased tremendously since the importance of research has been stressed upon. For example, the number of research has gone up from only 5 in 2000 to 29 in 2004. Such tremendous increase has been due to the incentives offered such as rewards, promotion and many other benefits.

However, such statistics can be misinterpreted. From the writers' observation, although research is urged, priority and the link to teaching seem to be placed at the bottom line of requirement. Lecturers are encouraged to undertake research or be part of any research group regardless of their field. Thus, they were either roped in for the exposure of doing research, their own pure interest or some other specific reasons like job confirmation purpose. As a result, there have been a few lecturers undertaking research that were non-related to their discipline. This may result in zero-relationship between the research done and teaching.

Thus, the aim of this study was to examine the relationship between research carried out by the academics of UiTM Pahang and teaching. It sought to find out the values that research can bring to teaching and the development of university education.

Methodology

This is a case study involving an analysis of the research registered with the URDC of UiTM Pahang from 2000 to 2006. The analysis was based on the description of the three links described by the literature.

The description is summarised in Table 1. Each of the research was evaluated in terms of its field and the researchers' teaching discipline. The relationship of the research and teaching was, then, determined based on the framework set for analysis.

Table 1: Description of Links between Research and Teaching

Link	Description
Positive / Complementary	• new and current knowledge developed for classroom teaching • research findings clarify, update and amend textbook contents • authentic materials presented in the classroom • lecturers at the forefront of knowledge
Negative / Conflicting	• research is prioritised over teaching • time spent on research reduces lecturers' availability • too specialised research affects general and basic course • focus on research rather than curriculum needs • lecturers' own research dominates the curriculum
Zero / Null	• not lecturers' discipline • no relevance to the curriculum • incompatible with classroom needs • findings not being used in the classroom

Findings and Discussion

The analysis shows that there were 83 research registered with URDC involving more than 160 researchers from 2000 - 2006. Table 2 shows the number of research for each year.

Table 2: Registered Research in UiTM Pahang (2000 - 2006)

Year	Number of Registered Research
2006	8
2005	8
2004	29
2003	8
2002	20
2001	5
2000	5
Total	**83**

Types of Research

The data show that 57 (67.5%) of the research undertaken were discipline-based and carried out by lecturers teaching in the respective discipline. Table 3 shows some of the examples of this. One discipline-based research, however, was carried out by a lecturer who was not from that discipline (Table 3, No. 3).

Table 3: Discipline-based Research and Lecturer's Discipline

Research	Lecturer's Discipline
1. Paper mill sludge wastes as a filler in thermoplastic	Wood Technology
2. Antimicrobial properties of the crude extracts from the leaves of Thottea Corymbosa	Biology
3. The implementation of database management system to cater students' record in school: An introduction to web-based applications	Computer Science
4. The impact of changing business environment towards the quality control of auditor	Accountancy
5. Penternakan lembu secara integrasi dengan tanaman utama menggunakan penjantanan Bhraman dengan induk Kedah-Kelantan berkaedah pagar elektrik	Accountancy

The data also indicate that besides discipline-based research, the lecturers in UiTM Pahang were also interested in carrying out enquiry research. The analysis shows that there were enquiry research done by lecturers from various disciplines. Some of the examples are shown in Table 4.

Table 4: Enquiry-based Research and Lecturer's Discipline

Research	Lecturer's Discipline
1. Persepsi pelajar terhadap ciri-ciri pensyarah yang diingini: satu kajian di program Pengurusan dan Teknologi Pejabat, UiTM Jengka	Office Management and Technology
2. Tinjauan terhadap masalah-masalah yang dihadapi oleh pelajar apabila Bahasa Inggeris digunakan sebagai bahasa pengantar	Plantation and Industrial Management
3. Kajian mengenai stail pembelajaran di sekolah	Mathematics
4. Kajian terhadap minat kakitangan UiTM Pahang untuk meningkatkan tahap akademik	Office Management and Technology

The Link between Research and Teaching

Based on the framework described earlier, the analysis indicates that the research done can have positive, negative and zero link with teaching, be it a discipline-based or enquiry. The link depends on how the research and its findings are communicated in classroom teaching.

Positive Link

The analysis shows that there would be a positive link between research and teaching if the research done and the lecturer's teaching discipline are related (refer to Table 3). These research can have positive relationship with teaching in terms of enhancing the credibility of the lecturers, knowledge up-date of the latest development in the field and the transfer of knowledge and skills to the students. For example, as mentioned previously, lecturers who become the experts in their field will be more confident in delivering their lessons which, in turn, will increase students' confidence both on the courses and their lecturers.

In addition, the lecturers will be able to present their own, authentic research in their teaching rather than reviewing others' from the textbooks.

Positive link between research and teaching is not subjected to disciplined-based research only. Enquiry research too, can benefit teaching. For example, the lecturers can apply the information that they have discovered from the research to their teaching in order to enhance students' learning. For example, the lecturers who investigated the 'Factors that lead to high failure rate in FAR 150' can use the information from the research findings to find solutions to prevent the high failure rate in the subject taught. Further examples of this type of research that can have positive link with teaching are shown in Table 5.

Table 5: Enquiry-based Research that can be Positively Linked to Teaching

Research	Lecturer's Discipline
1. Implikasi sikap dan persepsi terhadap bidang statistik kepada pembelajaran dan pencapaian kursus statistik perniagaan	Statistics
2. Examining factors affecting student motivation in learning English as a second language	English
3. Pandangan pelajar terhadap mata pelajaran Perakaunan	Accountancy
4.English Language competence: Are our graduates ready for the workplace?	English

Negative Link

Although research can have beneficial impacts on the teaching process, cautions need to be taken into making any conclusion that all discipline-based research can have positive links to teaching. These research, if undertaken at a higher level, can positively enhance students who are at the master's or doctoral level of learning as they are at the higher level of the discipline. These students, whose learning is mainly research-based, can benefit from the lecturers who are engaged in the research in terms of the transferable of skills and knowledge. Lecturers, too, are able to identify themselves with their students' learning. However, if lecturers pitch their lessons at high level for the undergraduates, teaching will be negatively

affected. In UiTM Pahang, most of the courses offered are at the diploma level. Thus, even if the research has made the lecturers at the forefront of knowledge, if they teach their classes at a higher level, students' cognitive and affective development might be negatively affected.

Null Link

The analysis shows that some of the research, especially the enquiry ones are not directly related to the curriculum. Examples of these are:

1. *Kajian terhadap minat kakitangan UiTM Pahang untuk meningkatkan tahap akademik*

2. *Persepsi pelajar terhadap kredibiliti pensyarah Pendidikan Islam: Satu kajian di UiTM Jengka*

3. *Persepsi pelajar terhadap ciri-ciri pensyarah yang diingini: satu kajian di Program Pengurusan dan Teknologi Pejabat, UiTM Jengka*

Based on the framework for the analysis, the link between the above research and teaching can be considered as null as the topics do not seem to have any relation to the curriculum and syllabus. Since the topics are not curriculum related, their link to teaching seems unclear. The research may have demonstrated motivation of doing research and contributed towards a body of knowledge, yet, they seem to be null-linked to teaching. However, if the findings of the research, especially for research (2) and (3) are taken into consideration in one's effort in improving his or her teaching style, the research then do have some benefits to teaching.

In addition, zero-relationship between research and teaching can exist if the topics of the research and lecturers' field are not related. The analysis also shows there seems to be a tendency for lecturers to carry out research that are not related to their field. This can be shown in Table 6.

Table 6: Research and Researcher's Field

Research	Researcher's Field
1. Penternakan Lembu Secara Integrasi Dengan Tanaman Utama Menggunakan Penjantanan Bhraman Dengan Induk Kedah-Kelantan Berkaedah Pagar Elektrik	Accountancy
2. The Conventional Method, The Islamic-based Method and the Montessori Method: A Comparison	English

The data in Table 6 clearly shows that the research undertaken do not complement the researchers'/lecturers' field. For example, research (1) definitely would not benefit teaching as the lecturer's field is Accountancy. The findings of this research is more likely to be presented in a plantation management class rather than an accounting class. Thus, it would certainly benefit the students if such research is conducted by a Plantation and Industrial Management lecturer as the content is more relevant to this discipline.

Likewise, research (2) can also be null-linked to teaching in UiTM as: a) it is not related to the curriculum as pre-school education is not offered in UiTM Pahang; and b) the lecturer is not from the Faculty of Education. Thus, this research may not contribute to teaching as there is no avenue for the research to be communicated to the students.

Positive or Null Link

Other enquiry research can either have positive or null relationship with teaching depending on how the research findings are communicated. The data in Table 7 show that the topics of research and the lecturer's field are related. Thus, the research can positively benefit teaching as lecturers are able to apply the knowledge to their teaching and enhance students' learning.

Table 7: Research and Researcher's Field

Research	Researcher's Discipline
1. Implikasi sikap dan persepsi terhadap bidang statistik kepada pembelajaran dan pencapaian dalam kursus statistik pernigaan	Mathematics/Statistics
2. Examining factors affecting student motivation in learning English as a second language	English
3. Factors that lead to high failure rate in FAR150	Accountancy
4. Kaji selidik mengenai kemahiran menggunakan perpustakaan di kalangan pelajar UiTM Pahang	Office Management and Technology

However, such assumption that these enquiry research are positively linked to teaching cannot be simply made. These research can also have zero-relationship with teaching if no pedagogical link is made. In short, the researcher cannot stop at making discoveries. The discoveries will have no value until it can benefit the students - the research outcomes will just be a knowledge that is not used to enhance teaching as it should have been. In short, if no reference to research is made in teaching, there will be a zero-link between these two.

Conclusion and Recommendation

Having analysed the research and their relationship with teaching, it can be concluded that research can have positive, negative and zero link with teaching. In our zeal in doing research, we need to remember that it is not the quantity of research that can benefit learning but what the research is focused on and how salient it is to teaching.

Research is important for the values that it can bring to teaching and the development of university education. However, the analysis of research taken in UiTM has demonstrated that while some can contribute positively toward teaching, others seem to be just research exercises, thus, may not contribute significantly towards teaching. Thus, it seems that a mission goal on research should be set so that researchers would know where they should stand and the complexities of the relationship between

research and teaching should be recognised.

In our zeal in urging research, we need to come back to the main objective of university, that is, imparting knowledge through teaching. This is because students still consider that the main role of university is to teach them effectively. Although Barnett (2000) has attested that research is a strong condition for teaching, he also raised the issue of whether lecturers adopt teaching approaches that are likely to foster student experiences that mirror their (lecturers') experiences as researchers. Ergo, the aim is to increase the circumstances in which teaching and research have occasion to meet, and to provide rewards not only for better teaching or for better research, but for demonstrations of the integration between teaching and research (Hattie & Marsh, 1996, p. 533).

In the case of UiTM Pahang, the integration between research and teaching can be met by bringing the latter into the undergraduate curriculum. Research and teaching should not be seen and treated as separated activities. Research-led teaching should be placed in the curriculum, particularly at the undergraduate level. Enquiry-based or research-based learning should replace the passive lecture-based experience. Not only it can bring in positive link between the two, it can also help to connect research with undergraduate learning. This promotes active learning as the process is highly iterative. All and all, students will learn to be critical and reflective – skills needed in the future world of work.

In addition, there has been no link between the role of the researchers with classroom teaching. Research outcomes need to be communicated to the students. Thus, researchers, at the other end, should see research as enquiry and teaching is used as a tool to help students construct understanding. In this way, research-based teaching, research-oriented staff and the curriculum can be linked.

Last but not least, there should be a model or a framework of organising teaching and research at the university level. This can be two-folds. First, the university can require the staff to undertake more discipline-based research and conduct little or no non-discipline-based research. Second, if research is to benefit and integrate teaching, the concept of research needs to be widened. This can be done by including the production of teaching materials and pedagogic implications. One way of ensuring this is by requiring 'pedagogical input statements' for all short-term or internal research grants.

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KAMISAH ARIFFIN, Academy of Language Studies, Universiti Teknologi MARA Pahang. kamisah@pahang.uitm.edu.my,

NAZIRAH RAMLI, Faculty of Information Technology and Quantitative Science. nazirahr@pahang.uitm.edu.my