A Critical and Analytical Study of the Benefits of Knowledge Transfer Partnerships (KTPs) to the Teaching of Business and Management Students

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Abstract
Knowledge Transfer Partnerships (KTPs) provide a significant opportunity for academics to ensure their teaching is up to date, challenging, based in the 'real world' and relevant to the needs of students. This paper assesses how KTPs can be used to benefit students and to identify the issues in doing so. There is considerable literature on the benefits of case studies for learning and teaching in business but little or no literature on the teaching benefits actually achieved by KTPs. Following a review of the literature in which the paper explores the research teaching nexus in the context of developing a continuum as abridges for the learning experience of students, an on-line questionnaire was developed, and emails inviting completion sent to 238 supervisors of current and recently completed (past 4 years) KTP projects in business schools obtained from the database on the KTP website. The paper suggests that the benefits of such activities are not fully exploited and that more could be made of the potential contribution to the student's learning experience. The use of case studies in the classroom was found not to be as developed as it could be as the main emphasis in the process was seen as delivering the outcomes of the project to the business partner. Anecdotes were used to bring teaching to life. Best practice in the use of KTPs to develop cases is also considered. Finally, the relevance of KTPs to research is outlined.

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Key words: Knowledge Transfer Partnerships (KTPs), case studies, research learning experience teaching nexus, basic knowing, teaching benefits and practice.

Introduction
Knowledge Transfer Partnerships (KTPs) through their objective of linking business with academia to develop projects relevant to business and other organisations provide a significant opportunity for academics to ensure their teaching is up to date, challenging, based in the 'real world' and retains relevance to the needs of students. For the purposes of growing the number of KTPs projects ‘business’ is being increasingly interpreted in a wide sense and offers not only opportunities for involvement by academics with businesses as profit making enterprises but also the public service and the third sector. This wider interpretation thus offers even more potential opportunities to embed additional case based material in the curriculum across a wide spectrum of economic activity. In an environment in which relevance is seen as critical in successful teaching (McKenzie and Swords, 2000) and goes beyond ‘basic knowing’ (Coombs et al, 2005, 21) this paper assesses how KTPs can be used to benefit students and to identify the issues in achieving this objective.

There is considerable literature on the benefits of case studies for learning and teaching in business (e.g. Popper 1959, Coombs et al, 2005) but little or no literature on the teaching benefits actually achieved by KTPs. Fry et al (1999) reported that case studies can create complex examples which give an insight into context and argue for a more holistic approach to teaching. The term ‘case study’ is also fairly open and covers a range of aspects which may not necessarily achieve desired learning outcomes. KTPs provide an opportunity to design case studies based on relevant, up to date and challenging material potentially enhancing the learning experience for all participants i.e. both staff and students in the teaching environment.

Background to KTPs and project objectives
Known by some as ‘higher education’s best kept secret’ (THES, 20/4/07) KTPs are a four way partnership between ‘business’, an academic institution, an associate and the respective funders. Originally known as Teaching Company Schemes (TCS) they were established in 1975 by the Science and Engineering Research Council, based upon the concept of ‘learning by doing’ matching an action based learning agenda (Revans, 1980, 8). By nature of the funding at that time
they were originally targeted at mainly engineering type projects. A change of name to Knowledge Transfer Partnerships now sees them cover almost the whole business spectrum to meet the social, technological and economic priorities of the UK and includes disciplines such as the arts, the media, and the social environment. These changes to the scheme are inevitably a reflection of the changing base of the UK economy, for example, the growth in importance in the service sector and there has been the relatively recent widening of the remit to include the public services and the third sector. The growth in partnership numbers has been met in part through increased public sector contributions - the objective being to strengthen the competitiveness, wealth creation, social and economic performance of the UK. In 2006/07 there were some 1,048 partnerships (http://www.ktponline.org.uk/strategy/history.aspx) in operation.

In terms of the process of applying for a KTP scheme once a potentially fundable project has been identified a preliminary bid is made to funders (e.g. ESRC, the Welsh Assembly Government, Department of Trade and Industry) for approval. This is followed, if successful, by a much more detailed proposal form mapping in considerable detail the planned outcomes from the project, the key milestones for the project, the deliverables for the academic institution, partner business organisation and the Associate. The outputs for the funder being a combination of all these. The primary drivers for the business being additional profit or significant cost savings as a result of the KTP project. Most projects are of two years duration although other lengths are possible with, at the time of writing, pilot short KTP projects of three months being trialled. The maximum project length is three years.

The Associate (or associates, as more than one working on a specific project is possible) has to be a recent graduate and obviously have the key skills which were identified in the detailed project proposal to deliver on the project's objectives. Built into the two year programme is a training programme including gaining a postgraduate qualification and NVQ level 4 in management. The Associate(s) is (are) an employee of the academic institution though embedded in the company. In essence we have the business partner needing knowledge, the academic institution having that knowledge and the Associate transferring that knowledge from the academic supervisors to the company while gaining experience at the same time. All business based partners pay a contribution towards the cost of the schemes the size of which is based on their financial strength. The project is monitored throughout its duration by a series of quarterly meetings managed by the representatives of the funders - a company called AEA. On conclusion of the project a detailed report has to be prepared by the business partner, the academic institution and the Associate. This in turn is graded by independent assessors.

While not unique in terms of the variety of research projects in which academics become involved the projects do provide a significant opportunity to participate in the design and delivery of strategic projects being undertaken over a wide range of economic activity (as stated the ‘business’ can be private sector, public sector and third sector). This opportunity could be described as ‘cradle to grave’ and takes place in ‘real’ time. While the associate is directly embedded in the company the academic is an adjunct of the associate and as such regular meetings should take place within the ‘business’ thus exposing the academic to a potential range of organisational cultures. The strategic importance of the projects to the organisations with which the academic is working offers opportunity to make contact with senior managers within the organisation and indeed various ‘trade associations’ of which the ‘business’ is a member. The schemes by their nature tend to be long term and even when the project is concluded the aim of the KTP scheme is to encourage contacts made to be maintained. A longitudinal study of the company and the project (or indeed other areas) is thus potentially possible although the academic needs to guard against bias as inevitably personal relations can develop.
Within the above context this paper has the following broad objectives of:-

- identifying the extent to which KTP-based materials are used in business and management teaching.
- comparing the extent of use of KTP-based materials in business and management teaching between individual business and management disciplines.
- establishing the extent of the use of KTP-based materials by academics other than the actual KTP supervisor(s).
- drawing appropriate conclusions

The literature

Ottewill and Macfarlane (2003) identify three clusters of challenges for enhancing the delivery of business and management courses in UK higher education. They see these clusters as relating to:

- the characteristics of students (motivation and study attitudes, student diversity),
- the subject matter and content of the business and management curriculum (keeping up to date, balancing theory and practice, overcoming compartmentalisation)
- and the surroundings or context within which courses are delivered (inadequate resources, ‘massification’ and delivery methods).

It would obviously be unrealistic for us in this paper to address all these issues. We nevertheless examine the potential contribution KTPs could make if exploited correctly to these important issues in terms of mainly the potential to enhance the student classroom learning experience although we touch on the other areas above.

While not without criticism (Campbell and Lewis, 1991, Brennan and Ahmad, 2005) the use of case studies to integrate the classroom educational experience with practice within business courses is relatively well established. Its beginnings might be aligned with the work of Popper (1959) who suggested that learning took place through the formulation of hypotheses and subsequent experiential testing of hypotheses. Case studies provide a forum for experiential testing and it follows that, the more realistic the case, the more likely it is that the process will be successful educationally. Barrows and Tamblyn (1980) propose that case study use emerged in the 1960s and served to challenge traditional views regarding the learning process. Such traditional views included the acceptance of a teacher-centred (subject-based) approach rather than a student-centred approach that concentrates on facilitating the process of learning to learn (e.g. Rogers 1969, Knowles 1975). Coombs, Hobbs, and Jenkins (2000) suggest that, when a case-based approach is applied to a subject such as accounting, with its traditional technical and didactic emphases, the challenge will be intensified. They develop a concept of basic knowing (2000, 2005) which is broadly seeing students as needing more than what can be regarded as the essential basic elements of a subject in that such elements are seen as inadequate for their future success in the work place. This basic knowledge being seen as potentially limiting the student’s ability to develop the necessary analytical and critical skills to potentially fully apply these higher skills at the level of sophistication demanded in a real world work based situation. Indeed the lack of such skills given the increasingly competitive demand for employment in the current economic climate may even prevent them obtaining that employment in the first place or, being confined to lower level jobs as they are held back until they do acquire them. The challenge to educators being to grow these skills through the curriculum at the earliest opportunity, such that they align the need for the development of such higher skills with the use of a problem-based-learning approach which matches the context of KTPs.
The research teaching nexus in business education has been a topic of increasing interest in recent years (Scott 2004, Healey 2005, Marriott and Duff, 2007, Jenkins et al 2007) although most research focuses on what links exist and how they could be improved (Cunningham et al, 2005). In terms of this paper the research teaching nexus might better be described as the research learning experience teaching nexus in that we explore how KTP material could be best used to stimulate, develop and enhance student learning (Figure 1). The learning experience used and as illustrated in the model acting as the bridge between research and teaching. In our view there is more than one way of linking the research teaching nexus given the multi faceted and multi dimensional nature of the lecturer, student and teaching material interface/relationship. In effect it could be argued that it is personal to the lecturer and the group of students being taught via the module material which best exploits the potential for the student group.

Thus, in the figure the intersection between the elements of the model could be at any point, continuously improving the central learning experience would remain as the key objective. We would also suggest that many modules as delivered would involve the complete spectrum of the teaching learning experience from passive to active learning depending on individual development and the point in time which the learner is at along their own learning journey. In addition each award would have its own research learning experience teaching nexus designed to achieve the awards objectives. It should also be remembered that the research learning experience teaching curriculum consists not just of one module but of various modules all of which should add together such that the sum of the whole aims to be greater than the sum of the parts for an award – the synergistic effect. Thus when taken looking at the holistic of the award each module’s individual research learning experience teaching nexus can be assessed in terms of the award’s objectives. Inevitably, therefore, the balance and emphasis between the components of the model will shift between those modules as the objective of maximising student benefit is targeted. In addition various universities may have different links between research and teaching. The goal seen by the authors in essence achieving for a student what can be regarded as the self actualised (Maslowe) student experience through the delivery methods set out in the centre of Figure 1.

This paper aims to fill a gap in the literature as we are unable to discover any similar such work with regard to KTPs. The paper also recognises the partnership between the educational institution, the business organisation and the learner such that effectively there is a tripartite activity involved to be potentially exploited. We would also argue that what we see with KTP projects is research aimed at ‘business’ through which the academics go through a learning process which results in the application of research to ‘business’ with the specific aim of improving that ‘business’ through applied and importantly actioned projects. In the experience of the authors this leads to a process of complex learning by the academic in the real world which offers significant potential to enrich the experience in the classroom since the resultant projects are live, are tested in the real world and either succeed or fail in ‘real time’. The student is thus able to experience potential success or failure with the opportunity to engage through the learning by doing (Boud et al, 1985) objective of KTPs even if second hand through case studies or anecdotally. The ‘experiential hypothesis’ of Popper for a successful project is thus tested in the workplace. Indeed to us they potentially provide a way of overcoming Hounsell’s (2002) problem of the pressure on academics to retain a high research profile which is seen as limiting the time that research active academics have to convey their research to the student.

The benefits of work based learning are recognised by Nixon et al (2006) but in this report the emphasis is on students who are actually in work. While many students at all levels now work part time research amongst our own students and in discussion with numerous other academics show they tend to be in generally low skilled hourly paid minimum wage type employment. Hence, we
Figure 1 Curriculum design and the research – learning experience-teaching nexus
(Adapted from Jenkins et al 2007)
would see KTPs as having the potential to raise for these students their awareness of the demands of the workplace at higher levels than the roles they currently perform since KTP projects by nature are strategic and, as stated above being undertaken, in ‘real’ time. It will have been noted that the more common longer term KTPs are longitudinal in nature aimed at solving real world problems and are different from many research projects which are by the nature of the pressures for publication that exist in academic under REF etc are more short term and, as such, don’t have the depth of association with ‘business’ that KTPs do. The academic in a KTP is intimately involved with the project and this may form a barrier to the neutrality of the researcher being so involved in the detail of the decisions being taken. It gives, however, first hand experience of events as they unfold and the reactions needed to those events. For students not in work (as stated above probably the minority) case studies are based on ‘real world’ experiences and where that academic is the facilitator can demonstrate involvement in that project. This may improve confidence in the delivery of material as it is seen as having relevance.

To return to those students not in work or have undertaken a work experience year as part of their academic programme the literature (Argyris (1980), Libby (1991)) suggest that properly designed cases studies could simulate the experiences they otherwise lack. In this context many research papers may review an area and critically assess its success or failure but, as stated, few such papers have the opportunity in business and management to actually apply their knowledge to build a long term relationship with a company pre, during and post project thus being involved throughout the project life cycle. In our view this potential reduces the relevance of this research to enhance the research teaching learning experience nexus.

**Research method**

Based on the literature reviewed above, a questionnaire instrument was developed to survey Business School academic supervisors of recently completed and current KTP projects in the knowledge areas of management science, marketing and electronic commerce. The questionnaire ascertained if and how KTP-based research has been used in teaching, for example through the use of case studies or research papers. Most questions were closed questions, including the use of five-point Likert scales, but respondents were also given the opportunity to provide comments on their use of KTP-based materials for teaching and their general views about the relevance of KTPs to teaching. It also invited participation in interviews at a future date.

A search of the database of current and completed projects on the KTP web site (http://www.ktponline.org.uk/) revealed that there are 318 projects supervised by Business Schools either in progress or completed since the beginning of 2005. A number of academics have supervised more than one project during that time, so there are 238 academic supervisors of such projects. The questionnaire was made available on-line, hosted by Lund Research Limited. The KTP web site provides contact details for the academic supervisor of each project, which enabled emails to be sent to 165 of the 238 academic supervisors identified above in February 2009 providing them with the rationale of the project and the web address of the online questionnaire and inviting them to complete it. A follow-up email was sent as a reminder three weeks after the original email. The answers to the closed questions were analysed using SPSS and those to the open questions were analysed using NVivo.

**Analysis of results**

There were 58 (35.2%) responses received to the request to complete the on-line questionnaire. Of these 35 (60.3%) were received in response to an initial request and the remainder in response to a follow up.
Descriptive statistics
An analysis of the respondents identified that 1 (1.7%) was employed in a Further Education institution, 29 (50.0%) in post-1992 Higher Education institutions and 28 (48.3%) in Higher Education institutions established pre-1992. The age distribution of the respondents, their level of lecturing experience and their KTP supervision experience are shown in the following tables:

<table>
<thead>
<tr>
<th>Range (years)</th>
<th>30 - 39</th>
<th>40 - 49</th>
<th>50 - 59</th>
<th>60+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>8</td>
<td>11</td>
<td>27</td>
<td>11</td>
</tr>
</tbody>
</table>

Table 1: Age distribution of respondents

<table>
<thead>
<tr>
<th>Range (years)</th>
<th>&lt; 5</th>
<th>5 - 10</th>
<th>10 - 15</th>
<th>15 - 20</th>
<th>20+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number</td>
<td>5</td>
<td>8</td>
<td>15</td>
<td>14</td>
<td>16</td>
</tr>
</tbody>
</table>

Table 2: Lecturing experience of respondents

<table>
<thead>
<tr>
<th>KTP (number)</th>
<th>0</th>
<th>1</th>
<th>2</th>
<th>3</th>
<th>4</th>
<th>5</th>
<th>5+</th>
</tr>
</thead>
<tbody>
<tr>
<td>Currently supervising</td>
<td>39</td>
<td>15</td>
<td>3</td>
<td>-</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Previously supervised (last 5 yrs)</td>
<td>4</td>
<td>31</td>
<td>7</td>
<td>8</td>
<td>2</td>
<td>4</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 3: KTP supervision experience of respondents

From tables 1-3 it is evident that the respondents are mainly senior academics with long lecturing experience and broad experience of supervising KTPs. This is suggestive that there may be an issue in terms of the continuation of KTPs on their current scale when these academics retire. This danger may be enhanced by the current financial position of HE if older expensive academics are ‘encouraged’ to retire or lost through other means. Non-parametric independent sample t-tests were performed for the four variables detailed in tables 1-3 to see whether there were any significant differences between respondents from pre and post-1992 Higher Education institutions. The only significant difference noted was in the number of current supervisions being undertaken (Mann-Whitney U = 281.5; Z = -2.215; p = 0.027), indicating that respondents employed in post-1992 institutions are supervising significantly more current KTPs. The same tests were also performed for the four variables which indicated no significant differences between those who responded to the initial request and those who responded after a reminder.

The reasons behind each individual becoming involved in KTPs were also investigated within the questionnaire. Table 4 gives the responses to the relevant questions measured on a Likert scale (Strongly agree (coded 1) – strongly disagree (coded 5)).

<table>
<thead>
<tr>
<th>Reason for personal involvement in KTPs</th>
<th>SA</th>
<th>A</th>
<th>U</th>
<th>D</th>
<th>SD</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>To improve the relevance of my teaching to the needs of the student/course</td>
<td>11</td>
<td>24</td>
<td>12</td>
<td>3</td>
<td>5</td>
<td>2.43</td>
</tr>
<tr>
<td>To provide an opportunity to develop a research interest</td>
<td>14</td>
<td>21</td>
<td>13</td>
<td>5</td>
<td>3</td>
<td>2.34</td>
</tr>
<tr>
<td>To link educational provider with industry/commerce</td>
<td>28</td>
<td>20</td>
<td>9</td>
<td>1</td>
<td>-</td>
<td>1.75</td>
</tr>
<tr>
<td>To link educational provider with the public service</td>
<td>5</td>
<td>6</td>
<td>25</td>
<td>10</td>
<td>8</td>
<td>3.17</td>
</tr>
<tr>
<td>To link educational provider with the third sector</td>
<td>3</td>
<td>15</td>
<td>23</td>
<td>7</td>
<td>6</td>
<td>2.98</td>
</tr>
<tr>
<td>Due to pressure of educational provider</td>
<td>2</td>
<td>11</td>
<td>14</td>
<td>18</td>
<td>11</td>
<td>3.49</td>
</tr>
</tbody>
</table>

Table 4: Reason for personal involvement in KTPs
Again non-parametric independent sample t-tests were performed for the six variables detailed in table 4 to see whether there were any significant differences between respondents from pre and post-1992 Higher Education institutions and between those who responded to the initial request and those who responded after a reminder. There were no significant differences noted here.

Non-parametric related sample t-tests were also performed across the six variables in table 4. The results of Friedman's ANOVA ($\chi^2(5) = 76.655, p = 0.000$) shows that there is a significant difference between the reasons behind respondents becoming involved with KTPs. Looking at the mean values for the variables in table 4 it is clear that there is clear agreement that respondents became involved with KTPs in order to link their institution with industry/commerce, but clear disagreement that this was done under pressure from the institution.

When the results of the questionnaire are split between pre-1992 and post-1992 respondents there is (still) a significant difference between the reasons behind respondents becoming involved with KTPs (For pre-1992 ($\chi^2(5) = 30.565, p = 0.000$) and for post-1992 ($\chi^2(5) = 49.209, p = 0.000$)). The mean values remain lowest for the variable indicating that respondents became involved with KTPs in order to link their institution with industry/commerce (For pre-1992 1.81 and post 1992 1.72), and highest for the variable indicating that this was done under pressure from the institution (For pre-1992 3.48 and post 1992 3.48).

A number of respondents added comments which explained the attraction to them of involvement in KTPs. Some were keen to use expertise gained from previous industrial experience while others saw involvement as an opportunity to keep up-to-date, for example:

“...opportunity to get involved with practice and to refresh business consultancy skills.”

For several academics KTP involvement provided either a track record in obtaining funding or the opportunity to use part of the funding on other research. Enhancing graduate employment opportunities featured highly as did income generation.

“The funding also allowed me to carry out a number of small projects in relation to city branding and regeneration (My chief research field).”

Evidence in support of paper objectives.

The questionnaire responses will now be analysed in light of the main objectives of the paper. To identify the extent to which KTP-based materials are used in business and management teaching.

Respondents were asked to identify how the experience gained through KTP supervision was used in their teaching (Table 5) and also at what level this material was used (Table 6). They were also asked their opinion as to which level of study the material they had developed from their involvement in KTPs was most suited (Table 7).

<table>
<thead>
<tr>
<th>Type of Material</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>As verbal anecdotal examples</td>
<td>54</td>
</tr>
<tr>
<td>As written anecdotal examples</td>
<td>24</td>
</tr>
<tr>
<td>As case studies with student activities/questions</td>
<td>37</td>
</tr>
<tr>
<td>As case studies with questions for formal assessment</td>
<td>8</td>
</tr>
<tr>
<td>As pre-seen examination case study</td>
<td>2</td>
</tr>
<tr>
<td>As unseen examination case study</td>
<td>5</td>
</tr>
</tbody>
</table>

Table 5: Experience gained from KTP supervision used in respondent’s teaching...
It is clear from table 5 that most (93.1%) of the respondents use verbal anecdotes from their experience of KTPs in their teaching. It is also clear that the use of this experience in formal assessment materials is far less widespread.

Non-parametric independent sample t-tests were performed for the six variables detailed in table 5 to see whether there were any significant differences between respondents from pre and post-1992 Higher Education institutions and between those who responded to the initial request and those who responded after a reminder. There were no significant differences noted here.

<table>
<thead>
<tr>
<th></th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>45</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>49</td>
</tr>
<tr>
<td>Professional</td>
<td>18</td>
</tr>
</tbody>
</table>

Table 6: Experience gained from KTP supervision used in teaching ...

<table>
<thead>
<tr>
<th></th>
<th>5</th>
<th>4</th>
<th>3</th>
<th>2</th>
<th>1</th>
<th>Mean</th>
</tr>
</thead>
<tbody>
<tr>
<td>Undergraduate</td>
<td>19</td>
<td>17</td>
<td>19</td>
<td>2</td>
<td>-</td>
<td>3.70</td>
</tr>
<tr>
<td>Postgraduate</td>
<td>24</td>
<td>17</td>
<td>14</td>
<td>-</td>
<td>-</td>
<td>4.28</td>
</tr>
<tr>
<td>Professional</td>
<td>23</td>
<td>11</td>
<td>8</td>
<td>3</td>
<td>-</td>
<td>4.14</td>
</tr>
</tbody>
</table>

Table 7: Teaching material most suited

Non-parametric independent sample t-tests were performed for the three variables detailed in table 7 to see whether there were any significant differences between respondents from pre and post-1992 Higher Education institutions. No significant differences were noted. The same tests were also performed to see whether there were significant differences between those who responded to the initial request and those who responded after a reminder. The only significant difference noted was in the "suitability for undergraduate level" variable (Mann-Whitney U = 124.0; Z = -2.564; p = 0.010), indicating that respondents replying after a reminder are significantly more likely to believe that teaching materials are more suited to undergraduate students.

Non-parametric related sample t-tests were also performed across the three variables in table 7. The results of Friedman’s ANOVA ($\chi^2(2) = 19.253$, p = 0.000) shows that there is a significant difference between the perceived suitability of KTP materials to the different levels of teaching. From the mean results in table 7 it is clear that the respondents perceived material best suited to postgraduate students and worst suited to undergraduates.

It must be noted that whilst undergraduate courses are seen as the least suitable for using the materials developed (table 7), it is in fact professional courses where the use is least (table 6). Looking at the variables in table 6 it is clear that there is a significant association between the use on undergraduate courses and whether the institution where the individual is employed is a pre-1992 or post-1992 Higher Education institutions ($\chi^2(1) = 7.118$, p = 0.008). This indicates a far higher level of usage at undergraduate level at post-1992 institutions. No significant associations were noted for postgraduate or professional usage in the different institution types.

The written responses to the questionnaire revealed a range of reasons for being involved in KTPs and not just to develop teaching related material. A range of answers maybe broadly be covered under the term ‘incentives’ for example financial reward, increase networking, track record of funding success and refreshing business skills.
In terms of specific teaching related material one respondent saw KTP-based materials as having no difference from material gained from an empirical research project, that both had the effect of connecting theory and practice. Another felt the particular strength of KTP-based materials was that it allows the lecturer to bring the subject to life.

Some academics clearly made extensive use of the materials either over the course of a single KTP or built up over a number of successive KTPs.

"Over the course of the two year project with a three year relationship there are lots of elements learned – some of which fit with my teaching for UG, some for PG and some for professional training."

"I have been involved with nine KTPs…..I have a lot of developed materials used in teaching."

KTP materials can also be used to develop consultancy:

"….developed one day ‘practical introduction to marketing’ course targeting SMEs as a direct result of the experience gained in the KTP."

One respondent commented that they saw KTPs as providing an opportunity to ‘further develop good students’.

To compare the extent of use of KTP-based materials in business and management teaching between individual business and management disciplines.

Respondents were asked to identify the area in which they had supervised KTPs. The results were: Management Science 21; Marketing 35; and Electronic commerce 1. Those who selected Management Science were then asked to identify the number of KTPs that they had supervised in: Accounting 0; Human resources 2; Information systems 11; Enterprise 6; and other 7. Given the numbers of respondents it was decided to limit any analysis of the usage across disciplines to the areas of Marketing and Management science.

Non-parametric independent sample t-tests were performed for the six variables detailed in table 5 to see whether there were any significant differences in the type of usage of teaching materials between respondents from Marketing and Management Science disciplines. There were no significant differences noted here.

Non-parametric independent sample t-tests were performed for the variables detailed in table 6 to see whether there were any significant differences in the level of courses where teaching materials were used between respondents from Marketing and Management Science disciplines. There was a significant difference noted in the usage of materials on undergraduate level courses (Mann-Whitney U = 280.0; Z = -2.025; p = 0.043), indicating that more use is made by those respondents in the Management Science discipline. There was also a significant difference in the “suitability at undergraduate level” variable in table 7 (Mann-Whitney U = 245.5; Z = -2.035; p = 0.042), indicating that those in the Management Science discipline thought teaching materials developed from KTP experience more suitable for undergraduate level teaching.

To establish the extent of the use of KTP-based materials by academics other than the actual KTP supervisor(s).

Respondents were also asked to comment on the usage of teaching materials developed from their KTP experience and used by colleagues. 25 (43.1%) of respondents reported that their materials are used by colleagues. The responses were then categorised using the same criteria as in table 5 above. The results are summarised in table 8.
Table 8: Experience gained from KTP supervision used in colleagues’ teaching …

<table>
<thead>
<tr>
<th>Description</th>
<th>Number</th>
</tr>
</thead>
<tbody>
<tr>
<td>As verbal anecdotal examples</td>
<td>14</td>
</tr>
<tr>
<td>As written anecdotal examples</td>
<td>11</td>
</tr>
<tr>
<td>As case studies with student activities/questions</td>
<td>15</td>
</tr>
<tr>
<td>As case studies with questions for formal assessment</td>
<td>5</td>
</tr>
<tr>
<td>As pre-seen examination case study</td>
<td>-</td>
</tr>
<tr>
<td>As unseen examination case study</td>
<td>2</td>
</tr>
</tbody>
</table>

Non-parametric two related sample t-tests were performed for each of the classifications in Table 5 to check for significant differences in the level of usage by the respondents and by their colleagues. The results of the Wilcoxon Signed Ranks tests showed that there were significant differences in the usage of verbal anecdotes (Z = -6.325; p = 0.000), written anecdotes (Z = -2.982; p = 0.003) and case studies with student activities/questions (Z = -4.158; p = 0.000). For each of these areas the usage by respondents was far higher than that of their colleagues.

Conclusions and Review

The literature discussion attempted to place KTPs in an amended version of the research teaching nexus by suggesting that it is important to recognise the learning experience continuum in curriculum design and its contribution to the nexus. In this context this paper has explored whether KTPs have the potential to make a contribution to developing that learning experience to benefit both the student and lecturer. While questionnaire respondents involved themselves in KTPs for a variety of reasons both personnel and institutional the majority felt involvement in KTPs improved relevance to the needs of the student (including enhancing graduate employment) and their courses in particular at the postgraduate level although all levels scored well. The paper also identified that there is, however, a danger that given the age profile of respondents and the current financial position of educational providers that inter alia significant experience of curriculum design potential by using KTP material/experience could be lost in a relatively short time.

KTP material was used in a variety of case study forms. As shown in the literature while there is debate over the value of case studies there is a consensus that appropriate scenarios set out in properly written and devised case studies can enhance the student learning experience. The ‘real world’ use of material through KTPs is consistent with Weil et al (2001) view that students benefit from such scenarios and thus KTPs give the potential opportunity to develop the skills identified in the model outlined in this paper. As would be expected KTP material was used in the respondents’ classes in a variety of forms but there was some dissemination to colleagues. The fact that other colleagues were prepared to accept this material shows that they judged it has having some value. One might speculate, however, that where such material was used anecdotally that this may have been less successful as the experience was being delivered second hand. It was, nevertheless of interest that case studies were disseminated and used by colleagues including for assessment purposes.

To date the paper presents significant but preliminary results. It raises interesting issues over whether the potential of KTPs is fully exploited and we would call for more detailed research on exactly how such material is used. It is concluded that the findings of the paper indicate that the benefits of KTPs are there to be exploited - the challenge to educators is how to maximise the opportunity they present to enhance the learning experience of students in an increasingly constrained resource environment. We allow such an opportunity to escape not only at a cost to us as educators but at a cost to our students.
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