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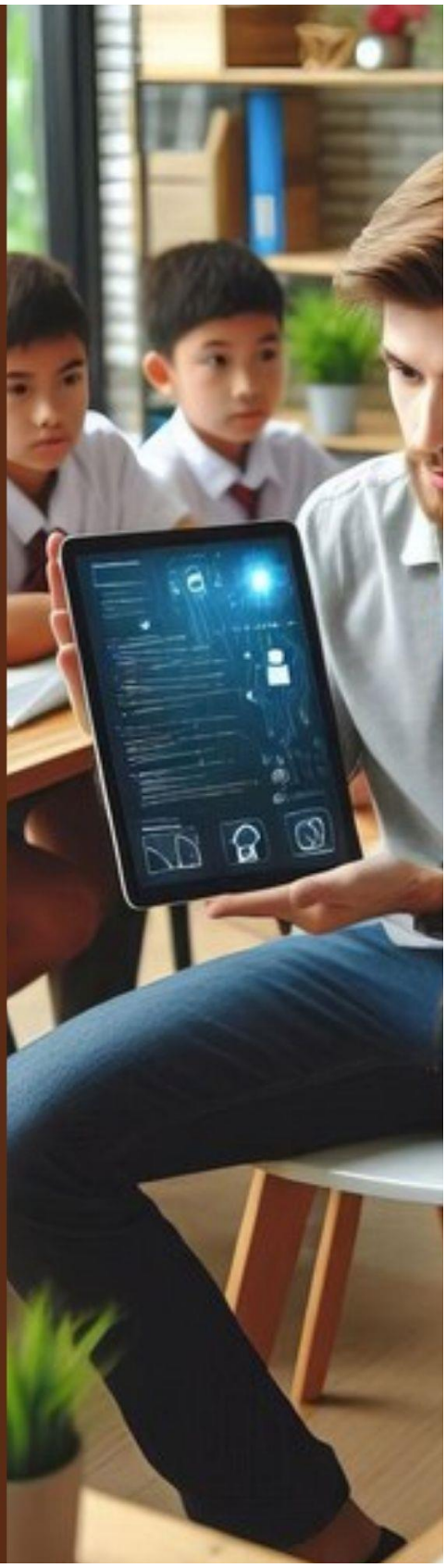

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Missing: Evidence of a scholarly approach to teaching and learningwithtechnologyinhighereducation

1GALIPAVANKALYAN, Dr.DEBAJYOTIMISHRA

Department of Education teaching,Kakatiya university Warangal india

Abstract:

There has to be an examination of the real educational benefits of the growing usage of technology in higher education classrooms. Do real-world examples support the assertion that technology is revolutionising higher education instruction and student learning? The study for this article is based on a review of the current literature on TEL (Technology Enhanced Learning). The article contends that there is a lack of academic rigour in the published descriptions of TEL practices. It would seem that technology-led treatments are more common in TEL than interventions that address actual problems with teaching and learning. It is easy to overlook the significant impact of educators' varied understandings of their own roles as educators and the value of professional development opportunities. In order to enhance practices and optimise the efficiency of TEL, we believe that cultivating a more academic mindset among university instructors is more important than offering technical training.

Keywords:

Technology-enhanced learning; student learning; teaching in higher education; scholarship of teaching and learning; technological determinism.

Introduction

The majority of western institutions today provide some kind of virtual or controlled learning environment, thanks to the massive expenditures made in learning and teaching infrastructure by the higher education industry in recent years. It was discovered in a study of UK higher education institutions conducted by the Universities and Colleges Information Systems Association in 2010 that "Enhancing the quality of learning and teaching is... the primary driver for considering using TEL" (Browne et al, 2010, p. 8). There has been a lot of investment of time and energy from educators, curriculum designers, and technical support personnel with the hope that students' learning would improve as a result of their use of technology. Nevertheless, there is still no clear agreement on the advantages for both instructors and students, and issues like:

- What impact is technology having upon the processes of teaching and learninginhighereducation?
- Who or what is considered to be the agent of any changes that are occurring inteachingpractices?
- What is the role of professional development activities in supporting teachingwithtechnology?
- Are teachers (and policy-makers) adopting a scholarly approach to the adoptionoftechnologyforeducational purposes?

In this essay we reflect upon the many articles, reports, surveys, presentations and casestudies that we have encountered in recent years concerning actual instantiations oftechnology use in university teaching and learning. Particular consideration will begiven to a recent review of literature and case studies (Price and Kirkwood, 2011). Intheprocesswehopetoprovidesometentativeanswerstothequestionslistedabove.

DifferingconceptionsofandapproachestoteachinginHE

There are consistent findings from research conducted in several countries pertaining tovariations among university teachers in terms of what they believe ‘teaching’ to beabout (Kember & Kwan, 2000; Samuelowicz& Bain, 1992 & 2001; Trigwell&Prosser,1996).Whilesomehave*teaching-focused*conceptions,withteachingbeing

views education mainly as a means of imparting knowledge, abilities, and values to pupils, whereas other educators prioritise the cultivation of students' conceptual understanding via learning-focused concepts. The same body of research also found that higher education instructors' pedagogical stances were associated with their perceptions of teaching. Teachers who prioritise "the transmission of knowledge" in their understanding of the role of education are more likely to focus on their own professional development and to take a teacher-centered approach in the classroom. Teaching, on the other hand, is more likely to use a learner-centred approach if the goal is to "promote conceptual development in learners." This means that the lessons are designed with the students' needs and growth in mind. In addition, research has shown that assessment practices and the way teachers approach their own teaching are related (Samuelowicz& Bain, 2002; Lindblom-Ylänne, Trigwell, Nevgi& Ashwin, 2006; Trigwell, Prosser & Waterhouse, 1999). Research by Åkerlind in 2003 and 2007 suggests that teachers' expectations of professional development activities are linked to their understanding of teaching, which in turn may limit their growth as educators. In the part that follows, we will go back to this problem.Understanding the diversity in the ways technology is utilised for university education might be aided by examining these variances in instructors' concepts and methods to teaching. It sheds light on why there are distinctions between the strategic (overarching strategy) and tactical (specific application) levels of technology utilisation. From a strategic perspective, those whose idea is centred on teaching are more inclined to use technology in ways that bolster current transmissive teaching methods. Presentational formats (such as webcasts, podcasts of lectures, and PowerPoint presentations) support the methods used by educators that place an emphasis on instruction. Furthermore, it might be said that those that prioritise education would lean towards using technology to either augment or replace their current methods of instruction.Conversely, educators whose concentration is on their students' learning are more likely to make use of resources that help their pupils grow as persons. Wikis, blogs, discussion forums, portfolios, and other similar technologies are advocated by these educators as ways for students to critically examine information and data, work in groups, and reflect on and showcase their own learning and growth. Commonly, they would be linked to endeavours to revolutionise the learning process by actively engaging with information.

building and sharing, and reflection upon learning and development episodes andprocesses.In terms of tactical approaches to technology use, variations in conceptions of teachingcan account for the different ways in which a particular technology or tool can beutilised(e.g.discussionforums,podcasts,wikis,etc.)

Table1abouthere

Table 1 illustrates how we theorise the relationship between conceptions of teaching,approachestoteaching, andapproachestoteachingandlearningwithtechnology.

Whatdowemeanbya‘scholarly approach’?

We do not wish to debate the meaning of ‘scholarship’ at length here. However, we feelthat this succinct statement (Hutchins, Huber and Ciccone, 2011, p. 3) captures manykeypoints forourdiscussion:

> The scholarship of teaching and learning is, at its core, an approach toteaching that is *informed by inquiry and evidence* (both one’s own, andthat of others) about student learning. In this sense, it is not so much afunction of what particular pedagogies [teachers] use. Rather, it concernsthe thoughtfulness with which they construct the learning environmentsthey offer students, the attention they pay to students and their learning,and the engagement they seek with colleagues on all things pertaining toeducation in their disciplines, programs, and institutions [*emphasisadded*].

In a recent literature review of accounts of the use of technology for teaching andlearning in higher education (Price and Kirkwood, 2011) we looked for indications of ascholarly approach having been applied. Peer-reviewed articles in the research literatureand case studies published on the HEA *EvidenceNet*and JISC *Infonet*websites duringthe period from 2005 to 2010 were examined. To be included within the review,documents had to report upon an actual application of technology for teaching and/orlearning purposes in higher education. The journal articles were all written in English,butreferredtoTELprojectsinmanydifferentcountries.Allthedocumentsthatwere

reviewed had to provide some form of evidence of the impact of the innovation orintervention.Whenexaminingtheliteraturethefollowingaspectswereconsidered:

- Whatevidencewasbeingusedtodrivetheinnovation/intervention?
- Whatevidencewasgathered?
- What evidence illustrates changes in the professional practice of teachers inhigher education?

To explore the issues further, we related accounts of TEL innovations or interventionsto one particular model of the scholarship of teaching (Trigwell, Martin, Benjamin &Prosser, 2000). We found the four dimensions they propose (p. 163) to be useful for ourpurpose:

> The extent to which a teacher is engaging in the scholarship of teachingmight…bedescribedintermsofthesefourdimensionsasfollows:
> (a) the extent to which they engage with the scholarly contributions ofothers, including the literature of teaching and learning of a generalnature,andparticularlythat intheirdiscipline;
> (b) the focus of their reflection on their own teaching practice and thelearning of students within the context of their own discipline: whether itis unfocussed, or whether it is asking what do I need to know and how doIfindout;
> (c) the quality of the communication and dissemination of aspects ofpractice and theoretical ideas about teaching and learning in general, andteachingandlearningwithintheirdiscipline; and
> (d) their conceptions of teaching and learning: whether the focus of theiractivitiesisonstudentlearningandteachingormainlyonteaching.

In the following sub-sections we reflect on the process and findings of that review inrelationtothedimensions portrayedbyTrigwell*et al*(2000).

a) Engagingwiththescholarlycontributionsofothers

Although published studies include a review of the relevant existing literature, in manyof the reviewed documents there was no indication that findings or evidence fromrelevant previous studies were considered *before* introducing their innovation or that ithad contributed to the framing of research questions. Few of the online case studiesreferredtorelevantfindingsfromtheliteratureorlessonslearnedfrompreviousstudies.

Any evidence that was drawn upon tended to be from published accounts of using theparticular technology that the teacher/researcher had selected to employ in their ownstudy. Such evidence was more likely to highlight the *general and potential ways* inwhich that technology or tool could benefit learning and teaching, rather than to anyevidence of actual learning gains achieved by analogous students in comparablecontexts.

b) Reflection on their own teaching practice and the learning of students within thecontextoftheir own discipline

More often than not technology was used to address an under-defined issue. In many ofthe articles and case studies there was no explicit statement of the rationale, i.e. whathad prompted the innovation, other than a desire to experiment with a particulartechnology or tool. Few accounts described a teaching or learning issue that needed tobe addressed and hardly any examined educational problems or opportunities that theirparticular students were facing. Where other studies were cited, there was seldom anyconsideration of the extent to which contextual factors (discipline, level, studentcharacteristics, etc.) were appropriately matched to the teacher's/researcher's owncircumstances.Often there was no clear articulation of what was considered toconstitute an 'enhancement' (to teaching, to learning or to the learning experience), sothat it was difficult to know precisely what was being sought and to identify whether ornotasatisfactoryoutcomehadbeenachieved.

c) Communication and dissemination of aspects of practice and theoretical ideasaboutteaching andlearning in general

As the review was of published documents, the teachers/researchers had clearly beenkeen to disseminate the outcomes of their studies. However, it would be difficult togeneralise the findings of many of the studies to any other context due to the manner inwhich the accounts were reported. Often the focus of a TEL innovation or interventionhad been on a fairly specific application of a technology (e.g. blogs, podcasts, wikis,etc.), although there are often many ways in which a particular technology can be usedfordifferenteducationalpurposesandcanvaryconsiderablybetweencontexts.
Published reports often provided insufficient contextual detail and the educationaldesign of what had actually been studied was considerably more complex than what isreported(Thorpe,2008).

d) Conceptionsofteachingandlearning

Few of the studies reviewed contained explicit statements about how *teaching* and*learning* had been conceptualised and reference to relevant theoretical ideas or modelswas uncommon. Many of the TEL innovations aimed to replicate or supplementexisting teaching practices without any discussion of the appropriateness of that currentapproach. It was rare to find any acknowledgement of the potential influence ofassessment upon what students actually did. One way of discerning the conception oflearningimplicit withinastudywas byconsideringthetypes ofevidencecollected.

Most of the TEL projects that sought to replicate or supplement existing teachingpractices employed test or course assignment scores to evidence learning gains. That is,a learning enhancement was interpreted as a *quantitative* change. A relatively smallnumber of TEL projects were explicitly concerned with fostering *qualitative*improvementsinstudent learning.

In terms of the model proposed by Trigwell, *et al* (2000), we suggest that relatively fewof the documents reviewed exhibited an approach to teaching that could be considered*scholarly*. So, what are the factors that are driving the use of technology in highereducation teaching and what purposes are being served by the massive growth incomputer-basedsystems?

Atechnology-ledfocusonteachingandlearning?

Among practitioners there does not appear to be a widely shared view of whatconstitutes *enhanced learning* in higher education and how it can be achieved. Strategyand policy documents often provide little in the way of illumination. For example, theHEFCE revised e-learning strategy (HEFCE, 2009) mentions ‘enhancing learning andteaching through the use of technology’ and indicated that there should be an increasedfocus on *student learning* in institutional approaches. However, the document provideslittleclarificationtoillustratewhattypesofactivityitenvisagesthetermtoembrace.

The 2009 document *Effective Practice in a Digital Age* from the UK’s Joint InformationSystems Committee (JISC) states that “Effective practice can be defined as employing arange of pedagogic skills to bring about the best possible learning for the widest varietyoflearners”(p.8).Itsuggeststhattechnologyaddsvaluetolearningby enablingarange of 11 features, the majority of which could be described as ‘operational’ (e.g.providingbetteraccessibilityandflexibilityforlearners;access toresources and

relationship with other people. There is a lack of discussion, however, of how and what these operational changes would impact students' learning (e.g., what does connection and access to resources mean?). We agree with Goodfellow and Lea (2007) that national and institutional TEL policies and strategies are too focused on process and system management of learning, rather than on how students can gain from a variety of ways of engaging with subject- and discipline-based information. There seems to be a preponderance of technology-led notions among higher education instructors when it comes to the development and execution of new kinds of academic practice, based on the imprecision and haziness around the topic of technology's role in the classroom. While Kirkwood and Price (2012) go into more detail about this, we are worried that many published reports of TEL activities in higher education place too much emphasis on technology-led learning and instruction. In their view, technology, and not education or learning, is the primary focus and driver of progress. We cannot conclude that those responsible for developing and assessing the innovations or interventions did not think about'scholarly' aspects and student learning concerns based on the primary sources we have studied, which are published reports. It is evident that the audience of practitioner and researcher colleagues did not find them relevant enough to warrant communication, even if they were considered. Instead of asking, "How can I help my students reach the intended or required learning outcomes?" or "What kinds of engagement or practice are made possible for learning?" many educators seem to be more concerned with "What can I do with this technology or tool?" Most technologies and digital tools offer multiple patterns of usage and activity kinds, just as book material may take numerous formats and be utilised in many ways for various purposes. In the classroom, for instance, students may keep a blog to record their thoughts and feelings on various subjects or to document their progress in school. The same technology, however, might equally serve as a resource for students to share ideas inside a program. A lecture is still a lecture regardless of whether the instructor utilises PowerPoint or a podcast with visual enhancements. While technology may allow students to view the lecture "any time, anywhere," it does not transform it in any way. Regarding any

educational context, the technology is secondary to the main object of attention, i.e. theeducationalpurposeandactivitythat isbeingenabledorsupported.

Unfortunately, it is not uncommon to find expressions of *technology as agent* in theresearch literature. For example, a survey of teaching staff in a North Americanuniversity (Ajjan& Hartshorne, 2008, p. 79) was reported to have found that mostteachers

> feel that integrating Web 2.0 technologies such as blogs and wikis intothe classroom learning environment can be effective at increasingstudents' satisfaction with the course, improve their learning and theirwriting ability, and increase student interaction with other students and[teaching staff]; thus changing the students' role from passive to activelearners,allowingthemtobettercreateandretainknowledge.

This exemplifies a technological deterministic conception of the educational process –that is, the idea that technological developments are the central determinants of socialchange rather than social contexts shaping the ways in which technological tools areused.Itfailstoappreciatetheprofessionalroleoftheacademicteacher–thereal*agent* – as creator and designer of educational activities that promote the development oflearning. Technological determinism endorses the notion that using technology forteaching will *in and of itself* lead to enhanced or transformed educational practices.However, TEL projects that put technology first often result in disappointment for boththeachersandtheirstudents(Kirkwood,2009).

With the multiple demands that are made upon university teachers, it is understandablethat they might pay insufficient attention to the findings from existing research literatureabout teaching and learning with technology. However, by seriously considering whateducational purposes they are trying to achieve with technology and discovering whatexistingresearchandevaluationisrelevantandappropriate,teachersmightattaingreaterrewardfortheirefforts.

Transforminguniversityteachingandlearning?

Some years ago we argued that technology-led innovations do not in themselves lead toimproved educational practices (Kirkwood and Price, 2005). We drew upon reviewsconductedinanumberofdevelopedcountriesovernumerousdecades.Wesuggested

that too often technologies had been introduced to university teaching with little or noconsideration being given to the implications for student learning. Despite much talkabout the potential of technology to transform teaching and learning in highereducation, very often the reality is different with much university teaching remainingfundamentallyunchanged:

> For the most part, faculty who make e-learning a part of their teaching doso by having electronics simplify tasks, not by fundamentally changinghow the subject is taught. Lecture notes are readily translated intoPowerPoint presentations. Course management tools … are used todistribute course materials, grades and assignments – but the coursematerials … and the assignments neither look nor feel different. (ZemskyandMassy,2004,pp.52-53)

There appears to be some confusion between (a) effecting changes in the *means* throughwhich university teaching happens, and (b) instigating changes in *how* universityteachers teach and learners learn. While we have found many examples of the first typeofchange; therearefar fewercases ofthesecond.

In the literature, it is unusual to come across accounts of *transformations* of teachingpractices: what is more commonly found is that technology is used to *replicate* or*supplement* traditional activities (e.g. Blin & Munro, 2008; Gonzalez, 2009; Roberts,2003). In the recent review referred to earlier (Price and Kirkwood, 2011) only aminority of projects reported in the literature or as online case studies could becharacterised as focusing on transforming the learning experience. Those projectsusually involved not only the development of TEL resources, but also extensive andstructural curriculum changes in the redesign of modules. While technology wasinvolved, it is difficult to estimate the extent to which any enhancement achieved by theredesigned teaching and learning activities was the product of changes in the syllabusand learning design rather than the application of technology as such. Causality isdifficulttoattributewhenseveral factorshavebeenmodified.

Typically, interventions that seek transformative outcomes need to draw upon a range ofdata sources and the forms of evidence that are collected must be richer than test scoresand self-report student satisfaction surveys. Use of a range of data sources enables thetriangulationofevidence:italsoacknowledgesthatmanyinterrelatedfactorsinfluence

student learning. It is not only difficult to bring about improvements in student learningwithin 'real' contexts, it is even more problematic to demonstrate what has beenachievedandhowithasoccurred(PriceandRichardson,2004).

Driversforusingtechnologyinhighereducation

Some of the lack of clarity that we have observed might be attributed to the wide varietyof purposes that technology is expected to serve, given the range of different factorspresented as drivers for increased use of technologies in higher education. These includesuch things as costs (usually related to growth in student numbers), increasedaccessibility and flexibility, meeting students' expectations, responding to strategicchanges (at national or institutional levels), enhancing learning and transforminglearningandteaching.

Professionaldevelopmentforteachinginhighereducation

To senior managers and policy makers, it seems that enabling academic staff to makeappropriate use of technology for teaching and learning is considered to be a technicalmatter. After raising teachers' awareness about the possibilities offered by newtechnologies and tools, technical assistance might be necessary to get them up to speedin adopting new practices.Professional development activities are more likely to beconcerned with 'how to' issues rather than with explorations of 'why?' or 'for whatpurpose or goal?' (Price & Kirkwood, 2008). As pedagogical issues and models oflearning are infrequently addressed in an explicit manner, the validity andappropriateness of such a technical focus has been questioned (e.g. Benson & Brack,2009; Oliver & Conole, 2003). If the adequacy of existing beliefs and practices remainunchallenged, technology is unlikely to be used in ways that are not consistent with andsupportiveofateacher'scurrent ways ofteaching.

A superficial examination of the problem might lead one to believe that it is simply amatter of putting the cart before the horse, i.e. technology before pedagogy. But adeeper examination of the problem shows that even if pedagogic issues are consideredfirst, the adoption of technology might make little difference to student outcomes ifteaching is not reconceptualised in relation to TEL. More fundamental issues are relatedto beliefs about teaching and whether the teacher is engaged in passing on informationortransformingalearner.

We mentioned earlier that a teacher's conception of teaching can influence theirexpectations of and engagement with professional development activities. Nicholls(2005,p.621)reportedthat inherstudyofnewuniversitylecturers

> Those who associated teaching with the transmission of knowledge,where students had to acquire a well-defined body of knowledge, weremost anxious to develop more sophisticated skills to facilitate thetransmission. Those who associated teaching with facilitating learningwere anxious to understand and conceptualize the learning process, tohelptheirstudents.

Transmissive teaching beliefs permeate the sector and often determine the teachingcontext. Even the most reformed and innovative teacher can be constrained by thedepartmental or institutional context (Hockings, 2005; Pickering, 2006). This is oftenevident in professional development programmes that institutions adopt that focusprimarily on teaching 'how to' approaches with technologies as opposed to engagingactivities that support teachers to reflect on and reconsider heir deeply held beliefs aboutteaching.

Conclusion

The term TEL is frequently used in an unconsidered manner and many of the publishedaccountsofprojectslack ascholarlyapproachtoenhancingteachingandlearning. While technology has increasing influence throughout higher education, there is stillmuch to be learned about its effective educational contribution. Fundamental to ascholarly approach to using technology is that it should be informed by inquiry andevidence, but that these relate to the nature of teaching and learning, not just to specifictechnology applications. Transforming learning is a complex activity. It requiressophisticated reasoning about the goals and purpose of any intervention, the design ofthe evaluation and the interpretation of the results within the particular educationalcontext.

Too often what is missing is an appreciation that teachers' underlying conceptions ofteaching influencetheirgeneralapproachtoteachingandtheirmorespecificapproachto using technology. At the heart of developing the professional practice of academics inusingtechnologyisnot thenecessitytomakethemmoretechnologicallycompetent. Instead,itistheneedforteacherstoreconsidertheappropriatenessoftheirconceptions

of teaching and their more general approaches to teaching. While we value thecontribution of technology to supporting student learning, we strongly contend thattechnologyitselfis nottheagent of change: it istheteacher.

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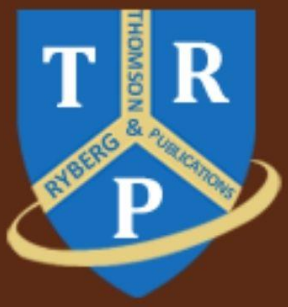

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