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Making Sense of Blended Learning

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Summary

A consensus is emerging that blended learning, a term that embraces various combinations of classroom presence and online study, will become the most common approach to teaching and learning in higher education. Does this consensus simply aim to safeguard the tradition of face-to-face teaching against an invasion of fully online learning - or can blended learning raise higher education to new levels of effectiveness and quality? We attempt an answer to this question.

Introduction

Thank you so much for the invitation to join you for this conference of the University of Derby Online. Your University kindly conferred the honorary degree of Doctor of the University on me in 2000. I thank you again for that honour. Since that time I have lived outside the UK, first in Paris and now in Vancouver, and it is a pleasure to be back in Derby for this conference.

My title today is *Making Sense of Blended Learning.* This term, blended learning, now seems to be on everyone's lips. When university leaders are asked what they are doing about online technology they answer, more often than not, that their programme offerings are increasingly taking the form of blended learning. It looks as if blended learning, a term that embraces various combinations of classroom presence and online study, will become the most common approach to teaching and learning in higher education.

Today I shall ask, and try to answer, a question that may seem rather cynical. Is this consensus about blended learning simply a bulwark to preserve the tradition of face-to-face teaching against an invasion of fully online learning - or can blended learning really raise higher education to new levels of effectiveness and quality (Daniel, 2015)?

Much of the research and work that I will refer to is from outside the UK because I assume that is why you invited me. My impression, which you may want to correct, is that on the global stage the UK is rather ahead of the game in online learning, mostly because you have, through JISC, a better structure for national coordination than any other country that I know. I know that the University of Derby has conducted a number of projects with JISC.

Let me first give credit where credit is due and recommend a brilliant book, *Teaching in a Digital Age,* by my fellow Vancouverite Tony Bates. Tony Bates launched the whole field of research into the student use of learning media in his two decades at the Open University from 1969 to 1990. He then moved to Canada just as I arrived from Canada as VC of the OU. I don't think there was any connection between these two moves!

In Canada Tony worked at the Open Learning Agency before becoming director of Distance Education at the University of British Columbia. This means that his thinking about online learning is based not just on nearly 50 years of research and leadership in the field, but also on experience in both the Open University and also in a university that does distance education alongside its classroom teaching. You can download his book free from BCCampus because it is an Open Educational Resource.

I will start by giving Tony's definitions of blended and hybrid learning. Then I shall give a potted version of some research into the effectiveness of online learning. This will lead me to talk of Tony Bates' principle of Equal Substitution, which holds that today we should regard online learning as the default mode when choosing teaching and learning methods, rather than treating classroom teaching as the default mode as we do today.

I shall give some vignettes about student attitudes to online learning from different parts of the world before noting the stark difference, at least in the US, between academics' views of online learning and those of their vice-chancellors.

This will lead me to talk briefly about MOOCs, not because they are of lasting importance in themselves, but because they have done more than anything else to put online learning on the map.

I will then interpret the development of online learning in terms of the Gartner Hype Cycle and Moore's Technology Adoption Cycle.

These suggest that we need to think harder about how to bring online learning into the mainstream of higher education. I shall end by asking which are the areas of teaching where face-to-face interaction remains most important - assuming that most of the rest will gradually move online.

Definitions

So let me begin by defining the territory.

Blended learning can mean any mix of face-to-face teaching and online learning on a continuum from face-to-face teaching with no technology to the all-technology course that is fully online. In his book Bates (2015, p. 309) lists some of the variety of designs that this can include, from the simple use of PowerPoint or clickers in class to more complex arrangements.

However, unlike many writers Bates makes a distinction between blended learning and hybrid learning. In blended learning the choice of technologies used is largely serendipitous, relying on what is available in the institution.

For Bates hybrid learning requires the complete redesign of the teaching process to enable students to do the majority of their learning online, coming to campus for specific sessions that can only be done in person. But how do you redesign the whole learning system to create optimum synergy between the in-person sessions and learning online?

We must look first at research on the effectiveness of different approaches to teaching and learning.

What does the research say?

What does the research say about the relative merits of in-person and distance or online instruction? I note three significant studies.

Almost 50 years ago Dubin & Taveggia (1968) (see also Neuendorf, 2013) set the tone of much of the research that was to follow when they wrote: 'we have reported the results of a reanalysis of the data from 91 comparative studies of college teaching technologies conducted between 1924 and 1965. These data demonstrate clearly and unequivocally that there is no measurable difference among truly distinctive methods of college instruction when evaluated by student performance on final examinations'.

Since then the most significant research has been done by using meta-analyses to bring together the results of many separate investigations. I note two of them.

Bob Bernard and his group in Montreal (Bernard et al., 2004) compared distance education with classroom instruction for a variety of learners by examining 232 studies published from 1985 to 2001. They found an overall effect size close to zero for student achievement. However, asynchronous distance education had a small but significant positive effect.

Ten years later Barbara Means and her colleagues (Means et al., 2013) compared blended learning with face-to-face teaching on the basis of articles published between 1996 and 2008 that focused on web-based courses where more than 25% of the instruction - but not all - was delivered online. They only included research with robust methodology in their meta-analysis, winnowing a pool of over 500 papers down to a final cut of 45.

They found that students in online learning conditions performed modestly better than those receiving face-to-face instruction. The advantage over face-to-face classes was significant in those studies contrasting blended learning with traditional face-to-face instruction but not in those studies contrasting purely online with face-to-face conditions.

In their conclusions these authors warn us not to interpret studies of instruction in different media as demonstrating an effect for the medium itself, because conditions may

vary with respect to a whole set of instructor and content variables. Their warning is worth quoting in full:

'(Our findings) should not be construed as demonstrating that online learning is superior as a medium. Rather, it is the combination of elements in the treatment conditions, especially the inclusion of different kinds of learning activities that has proved effective across studies. Studies using blended learning tended also to involve more learning time, additional instructional resources, and course elements that encourage interactions among learners. This confounding leaves open the possibility that one or all of these other practice variables, rather than the blending of online and offline media *per se*, accounts for the particularly positive outcomes for blended learning in the studies included in the meta-analysis. From a practical standpoint, however, a major reason for using blended learning approaches is to increase the amount of time that students spend engaging with the instructional materials'.

They conclude: '(Our) findings do not support simply putting an existing course online, but they do support redesigning instruction to incorporate additional learning opportunities online while retaining elements of face-to-face instruction. The positive findings with respect to blended learning approaches... provide justification for the investment in the development of blended courses' (Means et. al. 2013, p. 36).

Their comment about 'redesigning instruction' harks back to Bates' distinction between blended learning, where the mix of online and face-to-face can be pretty idiosyncratic, and hybrid learning, which involves a more systematic redesign of the combination of approaches.

Let's summarise the implications of these two major meta-analyses:

- Both studies show that face-to-face instruction is <u>not</u> superior to asynchronous distance or online teaching.

- The Bernard result that synchronous distance education had a small negative effect on student achievement implies that institutions should not waste money on trying to re-create the impression of live, face-to-face instruction by investment in expensive remote classroom systems for synchronous instruction.

- The superiority of blended learning may not lie in the online medium itself but in the combination of elements that it brings into play, resulting in deeper student engagement with the instructional system.

So our goal should be hybrid learning: the redesign of the whole teaching-learning system to 'create optimum synergy between the in-person sessions and learning online' (Bates, 2015, p. 310).

But this presents us with a challenge because there is very little evidence or theory to guide decisions about what is best done online and what is best done in person in blended

learning, or indeed to tell us when fully online learning is a better option than classroom teaching. Curiously, as Bates (2015, p. 315) observes, there is 'very little evidence-based theory about what makes face-to-face teaching so special'. He argues that we should therefore operate according to what he calls the *law of equal substitution*. This is the assumption that academically most courses can be taught equally well online or face-to-face.

Tony Bates suggests that from this starting point other factors, 'such as cost, convenience for teachers, social networking, the skills and knowledge of the instructor, the type of students, or the context of the campus, will be stronger determinants of whether to teach a course online or on campus than the academic demands of the subject matter. These are all perfectly justifiable reasons for privileging the campus experience. Also there are likely to be some critical areas where there is a strong academic rationale for students to learn in a face-to-face or hands-on context. In other words, we need to identify the exceptions to the law of equal substitution. The unique pedagogical characteristics of campus-based teaching need to be researched more carefully...'

He concludes: 'we need to turn the question on its head: what are the academic or pedagogical justifications for the campus, when students can learn most things online?' (Bates 2015, p. 329).

Since the research shows that face-to-face instruction is, in general, less effective than online learning, we should consider online learning, not face-to-face instruction, as the default option when making choices. This is a break with current habits.

What do stakeholders think?

We know that old habits die hard - and face-to-face teaching is an old habit. So what do the stakeholders think? Let's consider students, university leaders and academic staff in that order.

What do students think of online learning? There been some interesting research in Hong Kong (Wong, 2015).

This research found that online learning is not nearly as popular with students as the Hong Kong authorities expected. Students there prefer face-to-face learning despite the fact that Hong Kong has high availability of personal computers and excellent broadband access. Why is this?

The most important barrier the researcher found was a lack of self-discipline and self-motivation in learners. This is linked to a teacher-centred and utilitarian learning culture with a tradition of rote learning that is the opposite of the self-directedness and student-centredness that online study requires. Also, the students' utilitarian aim of getting through the course with minimal work is often shared by teachers, who also seek to instruct with least effort.

In Canada, where I live, attitudes are very different. High-achieving students are particularly enthusiastic about learning online. They prefer blended learning courses to those that are fully face-to-face or fully online. They find blended courses more convenient and interesting and they learn key concepts better online than in face-to-face courses.

We can summarise this in two points.

First, an educational tradition where students are used to learning by rote and being assessed by conventional tests is not a good environment for introducing online learning without a lot of planning and preparation. Second, both blended and online offerings stimulate students to work harder and engage more fully with the course.

Turning to the attitudes of university leaders and academic staff I refer you to the most recent Babson survey on online learning in the United States and give you some figures from it. It found that seventy per cent (70%) of leaders of US universities say that online learning is a very important element of the future strategy for their universities. However, these leaders also report that only 28% of their academic staff members accept the value and legitimacy of online learning (Babson, 2014).

Clearly there are some tensions around the development of online learning. Students, in the West at least, like online learning and perform better, university leaders think their institutions must adopt online learning but, according to this survey in the US, academics are sceptical of its value and legitimacy.

The impact of MOOCs

At this point I will make a short digression about MOOCs, Massive Open Online Courses, because they have likely contributed to the differing attitudes of university leaders and academic staff to online learning that I have just reported.

The fact is that online learning, measured here by online enrolments as a proportion of total enrolments, had expanded slowly but steadily in the US, without much fanfare, throughout the first decade of this century. But in 2012 online learning became a front-of-mind issue for university leaders and the press when some elite US universities offered Massive Open Online Courses.

Never mind that the first MOOC had been offered in Canada four years earlier using a connectivist approach! It was the arrival of Harvard, MIT and Co. on the scene that made people sit up. These figures from an early MIT MOOC are typical: massive registrations, low participation in the tests and dismal completion rates.

But US universities are extremely respectful of their elite institutions. If Harvard was going online it must be OK. Many had previously dismissed online learning as merely a form of distance education and therefore below the salt for serious academic institutions. Now these folks sat up and took online learning seriously - or at first they at least took

MOOCs seriously. A remarkable copycat phenomenon began. Although the image of a herd of cattle would be more onomatopoeic!

It took a year or two and a lot of money before institutions that rushed into MOOCs learned the hard way about their two major weaknesses. These weaknesses are first that MOOCs did not then - and mostly still do not - lead to credits that can be counted towards a credential. The second weakness is that 'open' in the acronym MOOC usually means free to the learner so there is no convincing business model. MOOCs cost money to produce and offer, but no revenue is generated unless a MOOC attracts learners to pay for one of the institution's regular courses afterwards.

Don't get me wrong. MOOCs have their place. I'm an avid consumer of MOOCs myself, having taken ten of them from the FutureLearn consortium. In fact I'm a typical MOOC consumer. I'm old, I already have all the university degrees I need, I like things that are free, and I still like to learn new things. In this respect MOOCs are a contemporary version of the extra-mural lectures that some UK universities began offering for free in communities around their region in the 19th century.

However, MOOCs themselves are not a revolution in higher education because higher education is not just about teaching and learning but also about assessment and credentials.

What MOOCs have done is to alert people to the potential of online learning. Indeed some now refer to all online courses as MOOCs but this is not helpful. By the end of 2014 there were nearly 4,000 courses called MOOCs available around the world. I can't find a more recent figure because no one seems to be counting MOOCs any longer. This cartoon is part of the explanation. As institutions try to address their weaknesses, MOOCs have diversified hugely and the meaning of each letter in the acronym MOOC now varies greatly.

But to return to my main theme, MOOCs have put online learning on the map, even if the massive MOOCs of the 2012 vintage were a passing fad.

Technology Adoption Cycles

The Gartner Hype Cycle is a good way of thinking about MOOCS. They were hailed as a revolution in higher education and hit a peak of inflated expectations in 2013.

Since then institutions have evaluated the educational and financial aspects of MOOCs, leading at first to disillusionment. MOOCs were not the long-awaited revolution in higher education. But people started thinking about how to use online learning intelligently.

The Gartner cycle would have us now moving up a slope of enlightenment towards a plateau of productivity in the use of online learning, meaning an optimal blend of online learning and face-to-face teaching.

But, of course, it's not quite as simple as that. To summarise my story so far:

- Students like online learning.

- Research shows that students learn more and better online.

- Online learning is expanding steadily

- MOOCs have made all universities take online learning seriously.

- A majority of academic staff do not accept the value and legitimacy of online learning.

Clearly there are tensions to be resolved.

Another model of technology adoption may be helpful here. Moore's technology adoption cycle suggests that the expansion of online learning may not be a smooth continuous process. There is often a chasm between the early adopters - in this case the students - and a later group of pragmatists, here the academic staff, who need to be convinced.

It is a reasonable hypothesis that in many higher education institutions online learning is in the process trying to cross this chasm at the moment.

Crossing the chasm

What can we do to facilitate the process?

We might begin with Tony Bates' *Law of Equal Substitution,* which I mentioned earlier. Instead of asking, 'which parts of this course or programme might we put online' ask 'what parts must be done face-to-face'? But I also noted that there is very little evidence-based theory on what makes face-to-face teaching so special. Therefore, in designing a hybrid learning system that optimises the synergy between in person and online learning there are no easy formulas to apply.

Skills and knowledge for the 21st century

One place to start, however, is by reviewing the skills and knowledge that students need for life and work in the 21st century. This could be a lecture in itself so I shall just make two quick points: one about skills, the other about academic knowledge.

There is much talk today about the skills that we need for the 21st century. There are various lists, but this one captures those most frequently cited.

The point to stress, for higher education, is that most of these are not abstract, generic skills. They need to be embedded in a knowledge domain. Communication skills for lawyers are not the same as communication skills for nurses. Face-to-face interaction is an effective way for academics to contextualise these skills to particular disciplines and to share the tacit knowledge that is such an important element of professional practice.

There are also limits to role of online learning is laboratories and practical work, although technology can take over many of those tasks too. Bates (2015, p. 324) works through the design of a hypothetical course in haematology and concludes that four of the six key components of content and skills could be done perfectly effectively online.

As regards the role of face-to-face teaching in sharing knowledge, note that there are two types of knowledge: experiential knowledge and academic knowledge. Knowledge that students learn from experience is important but academic knowledge is more future proof.

Academic knowledge is a second-order form of knowledge that seeks abstractions and generalisations based on reasoning and evidence. It's fashionable in some quarters today to denigrate anything that includes the word academic but this is a big mistake. It is not an accident that the societies that have prospered in both the industrial era and the knowledge age attach importance to rigour, abstraction, evidence-based generalisation, rationalism and academic independence. Depreciating the importance of academic knowledge is tantamount to cutting off the branch on which we are sitting.

The classic example used to make concrete this distinction between experiential and academic knowledge is Newton's Third Law of Motion, which states that for every action there is an equal and opposite reaction. Two decades ago Howard Gardner showed that even MIT physics students adopt the practices of naive elementary students when studying Newton's Laws of Motion (Gardner, 1991; Brown, 1992).

Ensuring students' grasp of academic knowledge is an area where in-person conversations between students and teachers are often necessary, even though MIT - possibly stung by Gardner's comment - has some excellent OERs on Newton's Laws.

What unites these two areas where face-to-face interaction is important is the fact that in higher education we are preparing our students to join a professional academic community. We should use that lens to examine what is best done online and what is best done in person.

Three useful principles

I conclude by listing three key principles that should guide us in finding the optimum synergy between in-person teaching and online learning that fits our definition of hybrid learning as blended learning that involves the redesign of the teaching and learning process.

First, online learning should be the default position. Everything that can be done online should be done online. Make full use of Open Educational Resources to improve quality, cut costs and enhance productivity.

Second, replace the cottage industry approach to teaching by teamwork and specialisation. The key staff roles requiring interaction with students are inculcating difficult skills, helping students grasp challenging academic knowledge and commenting carefully on the assignments that students produce through independent work.

Third, focus on learning outcomes. The move to online learning will challenge the viability of our campuses. But we will not solve that problem by forcing students to come to campus for study that they could do just as well online wherever they choose.

Conclusion

My title was *Making Sense of Blended Learning.*

I have argued that we should aim for hybrid learning that creates optimum synergy between in-person sessions and learning online.

A future of hybrid learning is an opportunity, not a threat. If implemented sensitively and professionally it will lead to higher student performance and greater staff satisfaction than trying to revamp an older model of higher education that was simply not designed for the masses of diverse students seeking higher learning in today's technology-rich age.

The opportunities that technology offers for empowering our students are enormous.

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