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Pedagogical advances in business models at business schools: In the age of networks

Peter LORANGE
Lorange Institue of Business

Howard THOMAS
Singapore Management University, howardthomas@smu.edu.sg

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Pedagogical advances in business models at business schools – in the age of networks

Peter Lorange
Lorange Institute of Business Zurich, Zurich, Switzerland, and
Howard Thomas
Lee Kong Chian School of Business,
Singapore Management University, Singapore, Singapore

Abstract

Purpose – The purpose of this paper is to focus on potential advances in pedagogy and on the process of learning in business schools. It examines innovations in teaching and learning methods particularly in the context of networked organizations.

Design/methodology/approach – It approaches, and examine the impact of, three key developments in business schools, namely, recent advances in IT, changes in the architecture of classrooms and learning spaces and advances in the way teaching is undertaken.

Findings – The paper suggests that a blend between self-learning via distance approaches and face-to-face learning will increasingly become the norm. Face-to-face sessions might be in a "flat room" environment with a creative mix of short lectures, experiential, group learning and conceptual plenary lectures, software innovations, and digital textbooks "open plan" learning spaces would complement the instructional process.

Research limitations/implications – There are clear implications for parallel IT (developments in course modules) and architectural innovations for the design of more effective and creative learning spaces.

Practical implications – Improving pedagogy together with the physical design and layout of learning spaces is critical. The aim is, through enhanced participative pedagogy and "friendly" architecture, to improve learning by encouraging dialogue and closer interaction between students and professors from different disciplines and fields.

Social implications – The authors argue that this model of collaborative learning and an interactive teaching framework should enable the same amount of learning material to be covered in a business school in approximately half-the-time required in conventional pedagogical approaches.

Originality/value – It offers a prescription for a participative, technology enhanced and interactive teaching pedagogy that could produce more effective and efficient, teaching outcomes. This has strong implications for the sustainability, and funding capability, of many existing business schools and business school models.

Keywords Management development, Management education

Paper type Viewpoint

Introduction

While there have been many recent substantive contributions attempting changes in the business model of business schools – in such areas as research directions, revised curricula content, etc. (Dameron and Durand, 2013; Rayment and Smith, 2013; Lorange, 2012, 2013; Thomas *et al.*, 2013), there seems to be relatively little focus on potential advances in pedagogy and in the process of learning itself. One exception is the work of

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Hall *et al.* (2013), although even here innovations in teaching and learning methods are only treated in a relatively cursory way. As a consequence the present article primarily addresses these evolutionary challenges in pedagogy.

Pedagogical innovations have, for a long time, played a secondary role in most business schools' strategic agendas (Thomas *et al.*, 2013). But, now, perhaps above all with the advent of the so-called networked organizational concept as it applies to business schools, the topic of delivery regarding the way of learning, i.e. how to address today's key pedagogical issues, is becoming more central. We are indeed seeing an increased interest in several pedagogical issues of learning – a development that should be welcomed! Therefore, we shall first briefly focus on some major pedagogical challenges in the networked-organized business school (on changing organizational patterns). Then, we shall discuss several recent developments in the field of IT as this applies to learning, stemming from new research as well as from technological advances, particularly as these research findings relate to the main arena for learning – the classroom. This leads us to finally review research findings relating to the physical space layouts at business schools. In conclusion, we shall point towards some further potential implications for "the business school of the future", notably addressing how to cope with a much faster pace of change when it comes to implementing innovations (Kinley and Ben-Hur, 2013; Ben-Hur, 2013).

Networks and business schools

The traditional model for value creation at business schools has come under criticism from several sources during recent years. Issues of contention include:

- Research excellence in contrast to teaching excellence – but, should there not be a balance? And, where is the balance?
- "Distance" between professors and business practice – perhaps we might say that some professors might fail to act as "social anthropologists", but rather seem to be comfortable as "sociologists".
- Professors may "tell the truth", rather than listen. They may at times not be comfortable with discussions of open-ended dilemmas.
- Teaching materials might often be generalized, with little or no tailor-making to the specific learning context. Further, an abundance of "power point" illustrations, typically mostly rather generic, tend to be part of many professors' "normal"/preferred way of delivery!
- The coverage of each axiomatic "basic" body of knowledge often seems to be predominant – too often with little or no attention to the interaction among these topics – little-to-no "horizontal" or cross-disciplinary focus. Sir Ken Robinson, among others, sometimes warns us about such an "industrial model" of education. He stresses that creativity and imagination is as equally important as academic literacy (Robinson, 2009). Other prominent critics of this axiomatic, disciplinary approach include Amabile (1997), and Christensen and Eyring (2011), as well as Arum and Roksa (2011).

In summary, criticism abounds about the traditional way of functioning for many business schools (Deiser, 2009; Thomas *et al.*, 2013). Put simply, we note that "things may no longer be totally right within our business school industry".

Rather, we shall highlight various aspects of business schools' responses when it comes to the issue of learning and pedagogy, especially within the emerging networked context. It is clear that some business schools might, to a varying extent, already have adopted one or several of the measures we shall review, but few, if any, business schools seem to have adopted all of these features, at least not to their fullest extent. There are three key developments that we consider to have a particularly strong impact on the pedagogical learning delivery side of business schools – namely, recent advances in IT, changes in the architecture of classroom/learning space, and advances in the way we teach in itself. But, before we discuss each of these developments in more detail, let us first briefly recapitulate what might be expected to be some of the more general process related aspects of the business school of the future (Lorange, 2012):

- To enhance relevance, many business schools may make broader use of visiting lecturers, including some from business as well as from academia, and also, from other business schools. By bringing together a broader set of experts on a given topic, without using one's own professors who might not always be fully on top of a given emerging topic, instructional relevance might be enhanced. And, there may be cost savings too!
- A more flexible model for learning – say, with a fuller combination of independent pre-studying, combined with relatively short classroom lectures (possibly technology enabled), group work and plenary discussions. This would ideally be focused on key dilemmas, and then tailored with post-programme follow-up, and implementation.
- A more modularized approach to curriculum design, so as to achieve more flexibility on behalf of the student, and thus, provide more opportunities for him/her to receive more tailored learning inputs within topical areas of particular needs and/or interest. Combining this type of learning with a full-time job can also enhance the depth of learning and improve practical implementation.
- A more open-ended learning model, for example, by allowing for the study of different topics/courses at various academic institutions and adhering to the learner's needs. So-called MOOCs (Bisoux, 2013) may facilitate this goal. Wilson (2013) illustrates this with an example drawn from Coursera (Clarke, 2013, p. 405). This was established in 2012, and as of April 2013 had 3.2 million students, and offered 338 courses, in five different languages. Access to Coursera's MOOCs would allow the student to tailor-make his/her learning experience much more, as might become evident by comparing the CV of a student taking his/her MBA studies in the traditional mode, with a degree from a traditional university, with a student amassing a series of certificates (say, organized by Coursera) (Clarke, 2013, p. 405), with sub-certificates from, say, the University of Michigan (in Finance), from Wharton (in Accounting), from Ludwig-Maximilian Universität, München (in Strategy), from University of Geneva (International Organization Management) and so on.
- Quality control becomes more critical, and the role of the networked University when it comes to safeguarding quality must be clarified: how, for example, can one ensure that the totality of the courses taken by a given student would actually lead to an acceptable version of a comprehensive business school degree? And, there are already "warnings" about this. For instance, the National Research Council of the USA in a recent report (2012) has signalled that if topics

are "doled out" in (too) finely digestible bits, this might prevent the students from gaining a more profound understanding (holistically) of business issues and problems. Key cross-cutting concepts might not be addressed and the capability to innovate may not be developed.

Tuition has increased rapidly in most areas of higher education – some might say that it has sky-rocketed. Perhaps, as a response, leading business schools now offer courses on the web for free, or at a low price. For instance, some of Wharton's core MBA courses are now on the web for free. And, all of the top ten US business schools now offer MOOCs courses for free. These courses represent much more than what was described as distance learning some 15-20 years ago. The quality is typically higher pedagogically, and has built-in tests, etc. And, several schools may offer certification, but no degree, provided that a certain number of MOOC-type courses have been passed satisfactorily – of course at a fee (typically at a reasonable level). It remains to be seen whether these "bits-and-pieces" of MOOC courses actually fit together meaningfully.

Further, how can institutions verify that a particular student actually is the one he/she claims to be – particularly with different academic institutions involved and some programs taken entirely on-line (e.g. MOOCS), etc. (Clarke, 2013). Regrettably, cheating in academia seems to be on the rise. This issue can be a challenge when it comes to other aspects of the academic value creating processes regarding take-home exams, student reports and theses. Luckily, there are some new computer-based programs available to check for "irregularities" in this area (such as turnitin in the area of plagiarism – http://turnitin.com/).

Advances in IT-based developments

Advances in IT-based technology have made efficient distance learning approaches, and more integrated uses of IT-based materials by students possible. However, it is evident, that a blend between self-learning, via distance, of the basics, say via MOOCs or video lectures, and face-to-face learning, typically in a business school's auditorium, and ideally with a primary focus on current dilemmas, i.e. a "meeting place" setting is increasingly advanced. This two dimensional approach more and more seems to be a reality! This would also enable the student "pick-and-choose" among many options to create his/her tailored curriculum.

Let us now consider recent developments regarding software. It is only about 30 years since IBM's personal computer brought us into the modern software age. But, much of the software available until recently has been focused on how specific persons can do the job better – i.e. "me, me, me"-based. But, as one of today's experts says: "These days, what is important is collaboration, small screens, fast turnarounds, social media and most of all, mobility" (Hardy, 2013). "Programs such as Google Maps and Microsoft Worlds (especially when combined with Box's software) […] makes it possible to view Microsoft World documents and other popular file formats across a variety of devices at the right size for whatever screen is being used at the time" (Hardy, 2013, p. 14). These more recent information and communication technologies are now playing a central role in most organizations. The networked firm (Bar and Sinard, 2006) could probably not have emerged without these developments. Also the younger students, can be more adequately served by this new wave of cooperative software technology. Organizational processes are also being changed – as for instance reported by Skapio and Varian (1999), Fjeldstad and Vetels and Fjeldstad (2009) and

Haanes (2001). There are also exciting new frontiers for a firm's development of its strategies (Gulbrandsen *et al.*, 2011, 2013a, b; Haefliger *et al.*, 2011). The bottom line is that there is more than enough powerful software available (TED, 1984; Pecha-Kucha, 2011) to facilitate a "we, we, we" – mode of working in a networked world – i.e. with the old hierarchical mode basically disappearing in business and business school environments.

Advances in learning pedagogy

We begin with a brief review of some major pedagogical development trends at IMD, a leading European Business School. Their major approach to learning has evolved over the years, and this evolution might be summarized briefly as follows: relatively short, freestanding programs, typically one-to-two weeks long, but with a few programs even longer (up to ten weeks). A typical set of four daily class sessions each with a typical length of one hour, some slightly longer – most sessions are taught in horse-shoe style, tapered shape auditoria, typically with from 30 to 60 participants in a given class. Most professors come from IMD's own permanent faculty, with a smaller sub-set of faculty assigned to each specific programme. There are also be a few occasional outside guest lectures, most often from practitioners. There would be a widespread use of typically quite current cases and separate study rooms would typically be provided for pre-assigned groups of participants (typically six to nine per group), to discuss cases and other assignments (typically for one to two hours, or so, per day). A "new" development, over time of several so-called "flat-rooms" had been constructed, each one with accompanying separately located study-group rooms. Thus, groups were seldom asked to work in the flat-rooms themselves, while yet they were configured with round tables to facilitate group involvement in existing classes. Indeed, there seemed to be a cultural bias among several professors to favour a more conventional approach of teaching – the classical classroom, and, with the associated use of separate supporting study-group rooms.

On the other hand, there are promising innovations centring on the delivery process of academic insights by professors in the classroom itself, and more are still emerging. First, there are examples that a less conventional, perhaps even a less authoritarian and less hierarchical teaching style might have considerable promise. The traditional working mode of many professors, scribbling on the black-board or browsing through a plethora of often relatively low-quality power point graphs may no longer be good enough (*The Economist*, reporting on Deslaurius and also Thomas *et al.*, 2013, 2014). As an example, a class of undergraduate students at the University of British Columbia took a compulsory physics course. The class was split into two groups: one group of students was taught in the traditional way, by well-regarded and experienced professors via traditionally run lectures – the so-called control group. The other group adopted a new style of learning, labelled deliberate practice, with the bulk of the class-time spent on problem-solving, discussions and group work, and with the absorption of facts and formulas left for homework and pre-readings. Prior assignments were given to guide the students on how to prepare for each class on their own, at home. Then, in class, small groups focused on dilemmas and specific problems, with the professor circling around. And, there were short, targeted discussions. This was the experimental group. The result was significant and quite sensational: On an average score of learning (a 12 point scale) – the score was 74 per cent for the experimental group, vs 41 per cent for the control group! This approach seems quite similar to the so-called Harkness Method, initially developed at the Philips Exeter Academy (Wikipedia, 2013b).

There are a few additional factors, and explanations, that may shed additional light on this methodology and results.

It turns out that few students – if any – are able to listen to a lecture by a professor for a too long a time, say, no more than 20 minutes. However, some professors are undoubtedly better communicators than others, and some academic subjects might lend themselves more easily to communication around key dilemmas. Also, the class size might matter, and so on. So, what is the exact "limit" for effective cognition? The evidence suggests that about 20 minutes, and with a sensible class size, is a reasonable norm (Anderson, 2013).

It is also the case that, while students from some cultures might be more effective in academic debates than others. This ability might above all be related to the language used. Therefore, student classes drawn from a more diverse set of cultures might find it easier to take part, and learn from, smaller group discussions than in discussions in larger fora (Hofstede, 1980). In particular, this seems to be critical for participants in group discussion situations where members do not have English as their mother tongue.

Finally, plenary discussions conducted, after first having had group discussions, seem to generate more effective participation by the majority – both in terms of experiencing more precise, more penetrating arguments in the plenary discussions, as well as "inviting" and gaining, more active participation from students from more typically "reserved" cultures where the norm might otherwise be more silence (e.g. Japanese, Finns, etc.).

The combined effect of all these pedagogical findings is promising. We might increasingly expect that classes will be conducted in classrooms with a flat-floor layout rather than in the more traditional step-shaped/horse-shoe designed auditoria. The participants would stay in one location throughout the learning cycle with no interruption by going into study rooms – thus, achieving higher learning "intensity"! The learning outcome seems powerful with a pedagogical model, based on a combination of a 20 minute lecture (with only a few, vu-graphs (Anderson, 2013) and no classical lecture), followed by about 20 minutes devoted to group discussions, with the participants sitting around say five round tables with up to seven persons at each table, prearranged according to cultural diversity, gender, professional backgrounds, etc. – and then finally with around 20 minutes devoted to plenary discussion of the key dilemmas. If this model was adopted, it should be possible to achieve similar positive learning outcomes to those found in the British Columbia study discussed earlier (Lorange, 2013). Specifically using this model in a business school we might be able to cover in about two days as much learning material effectively as in about five days using traditional pedagogical approaches, delivered in more conventional auditoria.

Note that much of the foundation behind the so-called "flat room" development (in IMD and the Lorange Institute) can be traced back not only to the so-called Harkness Method, but also to Dr James Dowd, a professor at Harvard Business School. Dr Dowd also spent several years at IMD to develop this approach. His methodology would involve relatively short-time teaching interventions by the professor, followed by group work, which would then culminate with a plenary discussion of key dilemmas. Regrettably Dr Dowd's pioneering work does not seem to have received the amount of acceptance, and implementation, as it should have had.

Digital textbooks

With new pedagogical approaches it is critical that the participants are provided with digital access to relevant independent homework materials to prepare beforehand.

Unfortunately, such access might become far too expensive if complete textbooks were to be assigned. Indeed, specific chapters or highlights, from conventional textbooks might be perfectly acceptable. However existing copyright laws may, however, may make this form of reproduction difficult. Interestingly, digital textbooks may provide some "solution" to this – at least in part. In the US digital textbook sales were only 2 per cent of the overall US textbook market in 2010. But by 2013 it had risen to 11 per cent. Estimated volume in 2017 is forecast at: 44 per cent (Babbage, 2012). The so-called FlexBooks are a good example of this approach. This is a textbook platform offered by the CK-12 Foundation, aimed at reducing the costs of textbooks (Wikipedia, 2013a; Clarke and Clarke, 2009).

Innovative architecture for more effective learning space

The physical interaction among the key "players" in academic value creation may be taking on new forms, because of the social norms of the new networked environment, the advent of emerging group enhancing, software technology, and, also because of modern architectural innovations (Allen and Henn, 2007; Kohlert, 2010; Catalini, 2012). It has been pointed out by several academicians that there seems to be a positive link between office design and productivity. With more so-called "open" space in the workplace, the achievement of higher levels of productivity seems to be possible. Price (2010) provides a good review. However, he also warns us that this positive relationship may not be linear. Rather, he proposes that there might be an "optimal" balance between the "old" order (the "old" way of organizing office space) and chaos (the "new", open, work space).

An open workplace has the potential to increase commonality, developing a more unified culture and strengthen connectivity. And, several path-breaking studies of architecture and communication among product development engineers in high-technology firms (Allen, 1984, 1997; Allen and Henn, 2007; Boudreau *et al.*, 2012) come up with similar findings: The physical layout does matter – indeed open space seems to lead to more innovative drive, higher speed and agility, and a more adaptive culture (Haughton, 2013).

Perhaps one of the most dramatic examples of how innovative corporate learning can be enhanced through architectural/physical design of facilities is found in the major Italian bank UniCredit's executive learning centre – the so-called UniManagement Center – which opened in January 2007 (Deiser, 2009, pp. 91-116), and is located outside Torino. Its main core is a large "flat" room, the Agora, where individuals might be seated, or, simply be asked to remain standing, to receive concentrated learning inputs, from lecturers, via pictures on screens around the circular wall of the centre room, viewing film strips shown on the walls, etc. The speaker (if there is one) would be on a podium in the middle of this room, with this turning around slowly, to allow all to have eye-contact with him/her. The Agora can also be used for smaller group discussions, or simply for informal mingling. There are also several group rooms. Some group rooms would be designed primarily for conversations, others for "doing" things – so-called energy rooms! To create physical outputs would typically be part of common group assignments. Some rooms would simply be meant for being together in relative silence, with quiet meditational space. The various types of rooms are intended to enhance different forms of learning insights. So far, the experience with the UniManagement Center seems to be overwhelmingly positive – both for enhancing learning of particular competences of general value to a bank, as well as for achieving learning focused on more specific issues related to particular business units. The explicit layout of this

learning facility, to enhance various aspects of learning largely seems to work – it is an "enabling learning space" (Deiser, 2009, p. 83). The increasing importance of the architect/designer in creating "learning spaces" which improve the quality of learning is now clearly evident.

There is another cutting-edge example, the new UTS Business School building in Sydney, designed by the world-renowned architect Frank Gehry (Green, 2013): this building is designed around the concept of a "tree house", to allow flow among actors to the fullest extent possible. The reality of the open physical flows is here combined with a rather dramatic architectural form. Similarly, Gehry's design of one of the new buildings at Novartis' innovative "Campus" in Basel is based on a similar mode of thinking –to achieve human interaction with the fullest, maximum creativity. Indeed, there is an increasing body of research, and evidence, on how innovation in communication may be enhanced through better uses of virtual architecture (Allen and Henn, 2007; Plesner and Horst, 2012; Lee-Kelley, 2013; Storpen and Venables, 2004; Kohlert, 2010).

The questions, and associated implications for business schools of architectural innovation to improve the learning environment are noted here:

- How to come up with a way – through pedagogy and architecture – for professors and students to interact more openly?
- How to find a way for professors in various fields and of various disciplinary backgrounds, cultures, ranks, etc. to more easily interact. Again, improving pedagogy together with physical design and layout seems to be critical!

However, here are two brief examples illustrating how hard it can be to create effective learning spaces.

When the London School of Economics constructed its new faculty office building in 2005, the then director was one of the few who cast his vote for an open, cross-disciplinary office landscape. All of the rest of the faculty members, more than 130 in total, voted for getting their own separate offices. And, when the Norwegian School of Management (BI) constructed its new campus in 2002, the faculty were installed in their private offices; all clustered according to disciplinary departmental structures. Great potential opportunities to create more effective cross-disciplinary work spaces were probably missed.

Admittedly, our insights regarding the increased importance of architectural design are relatively recent. So, when the first author in 1962 had the privilege to be a member of the first class of students entering the Norwegian School of Economics and Business Administration's (NHH) new campus, in Bergen, he found that there was a clear separation between faculty and students – the former group was located in a high-rise office block, while the students were in low-rise set of wings at the base – all part of the same building. Further the faculty were located on separate floors in the high-rise office block corresponding to specific academic disciplines – economics on one floor, accounting on another, and so on. At the end of each floor, the full professors had their offices, with more space and a better view than the rest of the academic staff, and with a separate secretary, "shielding" them from interacting with others. So, all-in-all, there was little networking, none-the-least due to the rigidity of these physical facilities! At the time (1962), academic administrators might not have known better. But, there is continuing evidence that this Norwegian approach to basic design is also often undertaken today. Take the recent Huntsman building at the Wharton School, University of Pennsylvania, inaugurated in 2006, as an example. In this building,

faculty members are still located in their own offices, and are clustered according to disciplinary lines. The interactions, among diverse members of the faculty and with the students would probably not occur as easily and effectively as might be hoped for by architectural designers.

Conclusion

Indeed, there seem to be several evolving trends that aspiring business schools might now strive to adopt. While the layout of academic buildings traditionally seems to have been heavily based on individual offices, and on grouping academicians with similar specialties together, a new mode of academic building design is more focused on "open space" has emerged. It is intended to create potentially faster communication and eclecticism, across disciplines as an easier way to integrate all professors, i.e. also those who are not necessarily working full-time at the particular academic institution. This, phenomenon of the "part-time" professor, incidentally, may more and more become a norm, with professors often having academic appointments at several institutions (Thomas *et al.*, 2013) and, also with a greater number of practitioners as lecturers (practice professors). A consequence of this form of organization is that cross-disciplinary research might benefit, too – to achieve better relevance, higher quality and with potentially more speedy outputs.

Interaction might more easily also take place – virtually as well as in-situ! The professor, and the student as well, would be part of a networked reality, interacting physically as well as via his/her desktop computer. In such networks the face-to-face interaction in open spaces would be very important. The students may more easily "see" the professors, and vice versa. Such dialogues might not only take place in front of the coffee machines, but more broadly at work stations, and even more fundamentally in the modern auditoria – a challenge for today's architects and designers! As already stressed, recent research generally shows how important the physical layout of work space seems to be, particularly when it comes to improving the quality of work (Allen and Henn, 2007; Lee-Kelley, 2013; Plesner and Horst, 2012; Kohlert, 2010). But many academic institutions may currently be far away from this goal.

As we have seen, in addition to our typical focus in business schools on the evolution of curriculum content and academic and financial resources, there are at least two other broad classes of factors that are likely to impact the "shape" of the successful business school of the future: modern software development, and path-breaking new pedagogical advances that encourage student/faculty participation. These factors would complement the more commonly found recipes that tend to call for revisions in the curricula agendas – involving topics to be taught, as well as revised, more relevant, and inter-disciplinary priorities for research (Thomas *et al.*, 2013). Obviously there will undoubtedly be additional, not yet known, key dimensions that will characterize the successful business school of the future. Our belief is that complementary improvements in IT and software will enable further leaps in effective pedagogy, as well as in further breakthrough when it comes to physical design of school facilities and "learning spaces". We predict that we shall see much more focus and attention paid to the design of learning spaces and improvements. These will evolve as deans and other senior managers address the need to make learning more practical, action and experience based and, in turn, lead to richer and more relevant interactions between business school academics and managers/leaders in business government, industry and society.

References

Allen, T.J. (1984), *Managing the Flow of Technology*, MIT Press, Cambridge, MA.

Allen, T.J. (1997), "Architecture and communication among product development engineers", working paper, Sloan School, Cambridge, MA, pp. 165-197.

Allen, T.J. and Henn, G.W. (2007), *The Organization and Architecture of Innovation*, Elsevier, Amsterdam.

Amabile, T. (1997), "Motivating creativity in organizations: on doing what you love and loving what you do", *California Management Review*, Vol. 40 No. 1, pp. 39-58.

Anderson, C. (2013), "How to give a killer presentation", *Harvard Business Review*, Vol. 91 No. 6, pp. 121-125.

Arum, R. and Roksa, J. (2011), *Academically Adrift: Limited Learning on College Campuses*, University of Chicago Press, Chicago, IL.

Babbage, C. (2012), "A textbook manoeuvre", *The Economist*.

Bar, F. and Sinard, C. (2006), "From hierarchies to network firms", in Lievrouw, L.A. and Livingston, S. (Eds), *The Handbook of New Media*, Sage, London.

Ben-Hur, S. (2013), *The Business of Corporate Learning*, Cambridge University Press, Cambridge.

Bisoux, T. (2013), "What makes a MOUC?", *BizEd*, July/August.

Boudreau, K., Gangali, I., Gaule, P., Guineau, E. and Lakhani, K. (2012), "Colocation and scientific collaboration: evidence from a field experiment", working paper, Harvard Business School, Boston, MA.

Catalini, C. (2012), "Microgeography and the direction of innovative activity", working paper, University of Toronto, Toronto.

Christensen, C. and Eyring, H.J. (2011), *The Innovative University*, Jossey-Bass, San Francisco, CA.

Clarke, T. (2013), "The advance of the MOOKs (massive open online courses)", *Education and Training*, Vol. 55 Nos 4/5, pp. 403-413.

Clarke, T. and Clarke, E. (2009), "Born digital? Pedagogy and computer-assisted learning", *Education and Training*, Vol. 51 Nos 5/6, pp. 395-407.

Dameron, S. and Durand, T. (2013), "Strategies for business schools in a multi-polar world", *Education and Training*, Vol. 55 Nos 4/5, pp. 323-335.

Deiser, R. (2009), *Designing the Smart Organization*, Jossey-Bass, San Francisco, CA.

Fjeldstad, O.D. and Haanes, K. (2001), "Strategy tradoffs in the knowledge and network economy", *Business Strategy Review*, Vol. 12 No. 1, pp. 1-10.

Green, R. (2013), "Hand and Mind", UTS internal memo, Mechanics School of Arts and UTS Business School, Sydney.

Gulbrandsen, I.T. and Just, S.N. (2011), "The collaborative paradigm: towards an invitational and participating concept of online communication", *Media, Culture & Society*, Vol. 33 No. 7, pp. 1095-1108.

Gulbrandsen, I.T. and Just, S.N. (2013), "Collaboratively constructed contradictory accounts – online communication about organizations", *Culture, Media & Society*, Vol. 35 No. 5, pp. 565-585.

Gulbrandsen, I.T., Kampstrup, A., Madsen, A.K., Plesner, U. and Raviola, E. (2013), "Changing landscape: new ICT and strategy", paper presented at the Nordic Management Research Conference, Reykjavik, 21-22 August.

Haefliger, S., Monteiro, E., Foray, D. and van Krogh, G. (2011), "Social software and strategy", *Long Range Planning*, Vol. 44 Nos 5/6, pp. 297-316.

Hall, R., Agarwal, R. and Green, R. (2013), "The future of management education in Australia: challenges and innovations", *Education and Training*, Vol. 55 Nos 4/5, pp. 348-369.

Hardy, Q. (2013), "Making the office mobility – friendly", *International Herald Tribune*, August, p. 14.

Haughton, D. (2013), "Business analytics as the confluence of business education by arts & science", in Hardy, C.M. and Emerett, D.L. (Eds), *Shaping the Future of Business Education*, Palgrave, London, pp. 98-99.

Hofstede, G. (1980), *Culture's Consequences: International Differences in Work-Related Values*, Sage Publications, Beverly Hills, CA.

Kinley, N. and Ben-Hur, S. (2013), *Talent Intelligence*, Jossey-Bass, San Francisco, CA.

Kohlert, C. (2010), *Entwickeln, Gestalten, Realisieren*, Impressum, Munich.

Lee-Kelley, L. (2013), "The 2012 London Olympics transport programme", *Eden Symposium, Skema, Lille*.

Lorange, P. (2012), "The business school of the future – the network-based business model", *Journal of Management Development*, Vol. 31 No. 4, pp. 424-430.

Lorange, P. (2013), "Business school culture: customer-focused, virtual and cooperative", *Education and Training*, Vol. 55 Nos 4-5, pp. 336-347.

Pecha-Kucha (2011), "Pecha-Kucha Org. Analysis", Ashburn, VA.

Plesner, U. and Horst, M. (2012), "Selling the selling point", *Covergence*, Vol. 18 No. 1, pp. 49-70.

Price, I. (2010), "The complex adaption workplace: a theoretical link between office design and productivity".

Rayment, J. and Smith, J. (2013), "The current and future role of business schools", *Education and Training*, Vol. 55 Nos 4/5, pp. 478-494.

Robinson, Sir K. (2009), *Unlocking Creativity: A Strategy for Development*, Oxford University Press, Oxford.

Skapio, C. and Varian, H. (1999), *Information Rules: A Strategic Guide to the Information Economy*, Harvard Business Press, Boston, MA.

Storpen, M and Venables, A.J. (2004), "Buzz: face-to-face contact and the urban economy", *Journal of Economics Geography*, Vol. 4 No. 4, pp. 351-370.

TED (1984), "Technology, entertainment, devises".

Thomas, H., Lorange, P. and Sheth, J. (2013), *The Business School in the 21st Century*, Cambridge University Press, Cambridge.

Wilson, D. (2013), Presentation at EFMD's Annual Conference, Brussels.

Wikipedia (2013a), "Flexbook, The Business School in the 21st Century", Cambridge University Press, Cambridge.

Wikipedia (2013b), "Hakness table".

Further reading

Chronicle of Higher Education (2011), "Six online learning trends", *Chronicle of Higher Education*, Vol. 20, pp. 20-21.

Clark, R.C. and Mayer, R.E. (2011), "E-learning: promise and pitfalls", in Clark, R.C. and Mayer, R.E. (Eds), *E-Leaning and the Science of Instruction*, Jossey-Bass, San Francisco, CA.

Dowd, J. (2011), "Set a High Bar", research paper, University of British Columbia, Vancouver.

Davis, J.R. (1995), *Interdisciplinary Courses and Team Teaching: New Arrangements for Learning*, Oryx Press, Phoenix, AZ.

Deslauriers, L. and Weimann, C.E. (2011), "Set a figh bar", research paper, University of British Columbia, Vancouver.

(The) Economist (2010), "The data deluge", *The Economist*, London.

(The) Economist (2011), "An alternative vote", *The Economist*, 12 May.

(The) Economist (2012), *The Idea Economy; Big Data and the Evolution of Smart Systems*, London.

Economist Intelligence Unit (2011), *Big Data: Harnessing a Game-Changing Asset*, London.

Fjeldstad, O.D. and Ketels, C.H.M. (2009), "Competitive advantage and the value network configuration", *Long Range Planning*, Vol. 39 No. 2, pp. 109-131.

Hardy, G.M. and Everett, D.L. (2013), *Shaping the Future of Business Education*, Palgrave, London.

Hayes, B. and Price, I. (2004), "Quantifying the complex adaptive workplace", *Facilities*, Vol. 22 Nos 1/2, pp. 8-18.

Lancaster, T. and Clarke, R. (2007), "The phenomenon of contract cheating", in Roberts, T.S. (Ed.), *Student Plagiarism in an Online World: Problems and Solutions*, Idea Group, Hershey, NY.

Leener, J. (2012), *The Architecture of Innovation: The Economics of Creative Organizations*, Harvard Business School Press, Boston, MA.

Lucas, H.C. Jr (2006), *The T-Form Organization*, Jossey-Bass, San Francisco, CA.

McKinsey Global Institute (2011), "Big data: the next frontier for innovation, competition and productivity".

Muff, K., Dyllick, T., Drewell, M., North, J., Shrivastava, P. and Haertle, J. (2013), *Managing Education for the World*, Edward Elgar, Cheltenham.

Parry, M. (2010), "Outsourced ed: colleagues hire companies to build their online courses", Chronicle of Higher Education, Vol. 20, July.