DEVELOPING INNOVATION IN HIGHER EDUCATION: THE CATALYTIC EFFECT OF CONFERENCE ATTENDANCE

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ABSTRACT (250 WORDS MAX)
Educational innovation through conference attendance is the main theme of this paper. It starts by describing and contrasting product and education innovation, highlighting the importance of the step of influencing and determining the future direction of the market or community of practice. It goes on to describe the important learning processes associated with copying, affirming its importance in the way that educational innovations spread and develop. The paper includes several personal examples where ideas have been copied and developed following E&PDE papers. The paper poses a further question regarding the place that subconscious innovation takes place, treating it as a topic for further research.

Keywords: Product innovation, Educational innovation, copying, conference attendance

1   OVERVIEW AND BACKGROUND

1.1 Background

The feedback form from a recent conference asked the question "What action (or actions) have you taken away from the day?" [1] The suggestion from this, of course, is that conferences are there for ideas to change the way that things are carried out – a good point and very valid.

The inspiration originated from some comments regarding the usefulness of attending conferences and other educational meetings such as course validations and accreditations. This focused on how effective practice might be identified and be incorporated into the teaching. A colleague claimed his approach to these occasions was to identify which ideas he would like to steal and inform the person he was going to steal them from, asking for permission.

1.2 Conferences

One of the least useful sorts of conference is where presenters arrive solely for their paper presentation and then immediately depart, depriving themselves of the opportunity for interaction and networking as well as learning and developing their practices and techniques, and becoming engaged in providing meaningful contributions during question sessions, both formal and informal. The contributors may obtain publications, but they have neither been influenced nor been allowed to influence the conference community significantly.

Another type of conference has limited time and facilities for interaction: a packed schedule, a huge number of erudite papers in many parallel sessions, noisy lunch and dinner sessions and introverted attendees who are not interested in discussion.

It would seem that the E&PDE community, whilst being reasonably large and having several parallel sessions, seems to have avoided these mistakes. Although the papers are certainly of reasonable quality and current, they do not necessarily consist of the latest piece of research that has just been published in an erudite journal and presenters are not usually trying to compete with each other. They are usually applied to educational situations that are relevant for ninety per cent of the attendees, and hence they tend to promote discussion and comment. They should promote effective educational

innovation, changing the face of the subject area and community, and if possible influencing those outside as well.

This does not mean that a conference does not have other purposes, such as to provide students and early-years academics opportunity to present their work, and here E&PDE also seems to be more tolerant and helpful than many other conferences. There doesn't seem to be the competitive atmosphere that sometimes pervades.

1.3 The theme

The main question the paper seeks to address is, "How might conferences such as the E&PDE conference engender effective educational innovation?" And, in particular, how individuals might use it to develop effective innovation.

Similar questions might be posed to the organisers, focusing on the theme and programme.

The paper is not intended to address the general benefits of conference networking, presenting papers or the extent to which an attendee's subconscious is developed and changed by attending the conference and meeting the community, which may in itself lead to innovatory practices. This latter could be the focus of further work.

2   INNOVATION

2.1 Definitions

Product innovation is not generally a clean, clear tidy process. No particular method will unfailingly result in effective innovation [2]. There may be a number of pointers, common ground and general stages that need to be covered, however.

Abernathy defines innovation as a major improvement or series of improvements in a "design approach" [3]. Kumar [4] defines it as "a viable offering that is new to a specific context and time, creating user and provider value". Abernathy's definition only refers to the novelty aspect and not viability or value: Kumar's definition includes the two aspects of novelty and value. This tends to be more in line with other definitions.

Here innovation is defined not simply as that which is new and different, but also, crucially, that which is new and different in ways that determine future direction of the product market or industry and which therefore offer leadership. This requirement of innovation to be imitated adds to both definitions above and is not generally included within traditional definitions.

2.2 Innovation in product design

Historical hindsight is a very effective way of determining which products have been innovatory. It may be difficult to identify these at the time.

Several examples of innovation have been documented, such as the developments within computing that led to disruptive innovations of the personal computer [5], the turbojet [6] or the manufacture of float glass.

However, innovation takes place even when not disruptive in character. Here it is clearer that the changes that produce innovation are those changes that pass from one company to another as freely as possible, without the interruptions and blockages that might be created by the patenting system. For instance, in the motor industry, patenting issues, although important, are ineffective because the real innovation – the aspect that can be copied – is something that is not novel but which was not copied significantly, and where patent protection would be weak. Layout arrangements tend to be freely copied, and distinctive manufacturing methods are licensed or distributed across companies (such as Budd's influence between 1910 and 1935) or are aspects which cannot be patented, such as the use of independent suspension where patents can only be applied to particular embodiments.

The evidence from a car history is that producing a different car is not enough to be regarded as innovative [7]. It must also meet a real need and be produced in reasonable quantity, and other car manufacturers must perceive features as worth copying.

2.3 Innovation in education

Higher Education currently faces three significant challenges and these are driving innovation, in the main. These are (i) pressures from globalisation; (ii) changing supply of and demand for higher

education; and (iii) changes in higher education funding. Whilst innovations also result from people and groups of people feeling they simply have 'a good idea', they may not be successful unless they fit this environment [8]. They may be developed by individuals, institutions or collaborative ventures between institutions.

However, a significant number of educational innovations are from individuals who have great ideas and who put them into practice in their own setting, get them to work and then publish them. Frequently there is no real design process – educators tend not to be designers. The second stage is still the equivalent of product prototyping or pre-production stage, and production of the innovation is left to publication and copying. For successful innovation in education the copying process is the major way that the innovation is and realised. This is the key stage for successful educational innovation. This last stage of idea dissemination and planting the novel concept into fresh soil are the most important features of educational innovation [9]. A significant requirement of such planting processes is that the idea must be allowed to become naturalised and must lose its 'not invented here' characteristics; it must be owned, embellished, customised and adapted, for its new soil. In particular, it needs to spread beyond the boundaries of the institution where it was first used [8].

Thus, for instance, the concept of Active Learning perhaps had its gestation with the development of the studio culture, originating in places such as the Arts and Crafts schools, revisited by the Bauhaus, discovered as a good idea and published by Schön in his Reflective Practitioner [10] in 1991, and by Bonwell and Eison in the same year [11] by which time a significant number of Art Schools and Product Design courses were already using it without necessarily using the Active Learning term. The concept has been revisited many times, each visitor claiming to make it their own each time they rediscover it.

3   EFFECTIVE USE OF COPYING PROCESSES

Educational innovation is heavily dependent upon the effectiveness of copying used to disseminate its initial usage.   Copying has long been utilised in education. The Adelphi Charter on intellectual property developed by the RSA reads:

> Humanity's capacity to generate new ideas and knowledge is its greatest asset. It is the source of art, science, innovation and economic development. Without it, individuals and societies stagnate.
>
> This creative imagination requires access to the ideas, learning and culture of others, past and present. And, in the future, others will use what we have done. Human rights call on us to ensure that everyone can create, access, use and share information and knowledge, enabling individuals, communities and societies to achieve their full potential [10].

This access to ideas, learning and culture is not really simply 'access'. The access needs to allow copying, changing and developing those ideas and culture both consciously and subconsciously.

At some points within the guild and apprenticeship schemes the pejorative moniker of 'sitting with Nellie' was used to describe this learning by copying process, but in fact this was a highly respected educational tradition. There is a single word in Japanese that has something of the same feeling – that to learn is to copy. But it is not quite that simple, as translators from any language will be aware. The Japanese concept is one of mastery. The concept is developed in papers collected by Singleton [12], largely based on experiences in Japan and describing learning that takes place in non-traditional settings. In this particular copying the master is first accurately identified. Then the master's works are identified and their tradition and learning processes identified: how their work has changed and developed. The next stage is to accurately copy every nuance of the master. This stage takes some considerable time, and some of those engaged in it, particularly if from a Western tradition, tend to get bored with the process and want to carry out something different [13]. The next stage, of course, is to seek to make the genre and process one's own, utilising the nuances subconsciously imbibed during the learning process. Almost to prove that the copying stage is imperfect, Dulwich Art gallery recently included a fake work of art produced by the Meishing Oil Painting Manufacturing Company in their gallery, asking visitors to identify the copied painting [14, 15]. In the BBC News report of the exhibition John Myatt, previously an art forger, was asked to identify the particular painting and although the one he chose was not identified, he described the unnatural use of brush strokes and technique as being how he would identify it [16]. Brush strokes tend to be developed and learnt

subconsciously during that long copying period as the nuances of the original master become understood.

5   CONFERENCE ATTENDANCE

So how might conferences be part of the process of developing innovations in education? And how, in particular, might this conference be an effective part of developing educational innovation?

The general principal appears to be to clearly identify the mastery that embodies the innovation. This may be a singular insight from a particular contribution: it might be how something becomes part of a different embodiment, after the conference. The principle is the same. It is to find something or things, in the opinion of the attendee, worth copying into their general vocabulary, worth becoming part of the subconscious toolbox that each educator carries around with them. It may be worth talking with the presenter and informing them of your desire to copy their ideas. Usually, this will be encouraged – after all, this is not exactly theft, but is part of the educational innovatory process. There could be several outcomes from this 'theft'. Often, that encouragement identifies the original idea to be worthwhile, when the original owner may have doubted it. An interesting outcomes is where the 'theft' results in collaboration and joint work, developing the innovation to be more credibility.

5.1 Examples

These tend to personal examples for the simple reason that knowledge of them is easily to hand – it includes personal memory of having been consciously and deliberately involved in the copying. They will also be limited to the Engineering and Product Design Education conferences.

5.1.1 Design coaching

In the 2003 conference a paper was presented that developed a hypothetical view of developing an individual's product design skills based on a sports coaching model [17]. The approach developed, several years later, into a funded project on Design Coaching. The title was there, but the project took a completely different turn, whilst relying on the original paper for inspiration. Coaching ideas were amalgamated to result in a joint paper, combining different approaches, one from personal experience of archery coaching and the other from the funded project, which developed future views and visions for a group of design staff rather than taking a student view [18]. The gestation from the stolen idea to the embodiment was a rather long four years, and it changed and developed significantly.

5.1.2 Future gazing using utopian science fiction

An Australian group project on future gazing was presented [19], where students were used utopian science fiction to develop food product concepts for 75 years hence. The theft took the idea of using utopian science fiction, kept the group project, but changed the product area from food to urban transport and the time span from 75 years hence to a more lowly 50 years. The first recycling of this project took a rather shorter time – it was reported in the next year's conference [20], complete with video presentations of airships over London. The following year students failed to come to terms with the concept of utopia. Students almost all failed to be happy enough with life to be able to propose positive futures. It didn't help that the whole conference theme in 2009 was based around 'Creating a better world'. And here were students unable to create a better world and having a dystopian view of the future. The experience, although not directly related to the initial prompting two years previously, was still related to and developed from that initial future-gazing vision – in a negative way [21].

5.1.3 Agile methods and processes

A paper for the 2011 E&PDE conference was noted as it came for review [22]. This was a review of a set of methods used for developing software and not for product development or education – what are known as the Agile methods, developed from the Agile manifesto of as long ago as 2001 [23]. It appeared to be possible to run a trial on these methods almost immediately, getting some MSc students to utilise these for a simple design problem and to report back with a critique of the methods. This was carried out before the paper was finally presented at the 2011 conference. Contact was made with the paper's author, who readily agreed to produce a collaborative paper for the next conference in 2012 [24].

5.1.4 Pecha kuccha presentations

Another instance came from conversation with a conference attendee keen to promote a paper he was intending to present at the E&PDE conference that year. The paper proposed the use of pecha kucha presentations for assessing students [25]. These have a fixed format of using 20 Power Point slides, each of 20 seconds. This cuts down significantly on assessment time and still allows it to be carried out effectively. These presentations were used to assess on a very large module with upwards of 400 students, working in groups, and were effective for cutting down assessment time (about 100 students can be assessed in a morning, in groups). It also appears to increase the ability of staff to carry out an effective assessment [26]. The assessment process has been copied by others and is now part of the assessment toolkit of numerous academics.

6   CONCLUSIONS

These examples, though limited, demonstrate that conferences can be useful sources of ideas and of ways to take effective, frequently tested ideas and rooting them in other soil. If sufficient of this process takes place it can be an effective way for transmitting innovations and moving them from one place to another, developing, growing and changing the ideas as they travel. They can be one reasonably successful way that innovations started by individuals can be developed into cross-institution movements and become incorporated into the daily work of educators elsewhere. These, however, are only the tip of the iceberg. They are the examples of conscious copying that take place. What is underneath the iceberg is the bit that can't be seen – the subconscious copying, taking in ideas and attitudes in a natural manner that cannot by its very nature be seen or measured. Investigating this area is one for others to build on – leaving one with a tantalising glimpse of the real importance and effectiveness of conference attendance.

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