

## ALTERNATIVE MODELS OF EDUCATION DELIVERY

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### INTRODUCTION: CONTEXT AND OUTLINE OF THE REQUIREMENT

The aim of this piece of work is to produce a number of alternative models of education delivery. In discussion this was clarified to mean “for the formal education sector”, since it was felt that the space of possibilities in the informal education sector was just too vast for this length and type of policy brief to encompass.

Conventional wisdom, as codified by the UNESCO Institute for Statistics (2012), divides the formal education sector into seven layers:

0. Pre-primary education
1. Primary education (first stage of basic education)
2. Lower secondary (second stage of basic education)
3. (Upper) secondary education
4. Post-secondary non-tertiary education
5. First stage of tertiary education (Bachelor degree)
6. Second stage of tertiary education (Higher degrees)

We take the view that there is no consensus on the wisdom of provision of IT equipment to very small children – consequently we do not further discuss layer 0, pre-primary.

We also feel that there is little value in IT terms in separating layers 5 and 6. Thus we focus on layers 1 to 5.

And finally we feel that there is an important “horizontal” division, conventionally thought of as between “vocational” and “academic” tertiary education – which ISCED denotes as 5B and 5A.

The focus on five key layers led us further to hypothesise that the creation of five alternative models of education delivery would sufficiently populate the space within the constraints of length in such policy briefs.

## KEY ISSUES

When constructing such models we bore in mind the following key issues.

### Archetypes

The models had to be compelling. In other words, they had to be

- easy and quick to describe – the classic “elevator pitch” but for a short elevator ride in a crowded elevator
- memorable
- repeatable to others without distortion even in the same language
- translatable into other languages

This is what we call archetypes. Wikipedia – itself just the latest instantiation of a compelling archetype – currently states that:

*An archetype is a universally understood symbol, term, statement, or pattern of behaviour, a prototype upon which others are copied, patterned, or emulated.*

*Archetypes are often used in myths and storytelling across different cultures. Archetypes are likewise supposed to have been present in folklore and literature for thousands of years, including prehistoric artwork.*

*The use of archetypes to illuminate personality and literature was advanced by Carl Jung early in the 20th century, who suggested the existence of universal content-less forms that channel experiences and emotions, resulting in recognizable and typical patterns of behaviour with certain probable outcomes.*

*Archetypes are cited as important to both ancient mythology and modern narratives.*

A number of more detailed consequences follow logically from the definition of archetype, but it is more useful to identify them separately.

A good example of a concept which does not seem to be an archetype is the current definition of Open Educational Resource (UNESCO 2012). This has consequences to be discussed later.

### Generalisable

Each archetype has to be generalisable. Even if located in some sector (layer) of “ISCED space”, it has to be applicable to some extent in adjacent layers. A virtual school is a good example – it is, and should be, cousin to a virtual college and a virtual university. It should be only fools and snobs who cannot see the similarities – yet many vendors locked into a sector are unaware that their products would apply to adjacent sectors – and vice versa.

## Scalable

Each archetype must be scalable, so that it can be implemented in educational systems of a wide range of sizes – from a small rural primary school (one class of 20 students) through a typical large comprehensive school in England (1000 pupils), up to a large campus university (40,000 students) and beyond to the even larger mega-universities (over 100,000 students) found among the distance learning providers.

## Sustainable

Each archetype must be sustainable. In other words, its existence cannot depend on constant grants from US foundations, from European or national funds (EU Lifelong Learning Programme, JISC, SURF) or from aid agencies. Even if the archetype is not a business, there has to be a business model (Curry 2001, Thompson 2001). Recent events have shown that the laws of economics were not suspended in real life or in university life – even if some people believed that they were.

## Deployable

Each archetype must be deployable in a variety of socio-economic situations in the more developed countries. We feel that it is a little restrictive to limit this category to the 34 countries in the OECD – thus we also include all the other high-income economies as categorised by the World Bank (2012). Finally, it seems unfair to omit high-income regions of the countries outside the high-income economies since many such regions are larger than many high-income countries and can have a high degree of autonomy, such as provinces in India and China. This approach gives us around 100 high-income countries and regions to consider.

## Deliverable

Each archetype must be deliverable “right now” in such countries/regions without doing any research or building any essentially new technology or software. For example there are (and have been for years) proposals for new kinds of assessment based on continuous speech recognition or handwriting style/speed analysis – but both of these, as with many other artificial intelligence techniques, still require massive R&D before they can be deployed. In contrast, techniques based on “unintelligent” statistical analysis of text are said now to be able to be deployed in novel assessment systems for textual answers – and we creep ever closer to “unintelligent” (essentially crowd-sourced) language translation –for some languages now good enough for educational researchers to use, if not yet good enough to teach students with.

## BEST PRACTICES

There are many compendia of best practices, but the majority of such research is not useful for this study, since it focuses on best practices for teachers, or in some cases learners, not for institutions. We here have to focus on institutional best practices. There is much less literature on that (Bacsich & Pepler 2009, Bacsich 2012a).

Fortunately there is a series of EU-funded projects which in the last five years have covered the ground in sufficient detail to be useful:

1. Re.ViCa – Reviewing (Traces of) European Virtual Campuses, 2007-09 (Schreurs (Ed) 2009)

1. VISCED – Virtual Schools and Colleges for Teenagers and Young Adults, 2011-12 (Pepler & Andries (Ed) 2012)
2. POERUP – Policies for OER Uptake, 2011-14 - in progress

To these must be added a number of prior and parallel projects such as CAPITAL (Bacsich & Pepler 2009, Bacsich et al 2010), LUOERL (Bacsich et al 2011) and “Time” (Bacsich 2012a).

### Virtual universities

By a virtual university we mean a tertiary institution (ISCED 5 or 6) where students study online, usually at home but sometimes at their place of employment, for most of their study time, with physical attendance very much in the minority, though in some institutions very much a key component.

Virtual universities are a development of systems of correspondence teaching dating back to the 1800s or even earlier. One might set 1858 as the start of the virtual university era as that was when the University of London launched its External Programme.

The second phase of the virtual university era might be conventionally dated to 1969 when the Open University in the UK opened its doors – it claims to be the first modern “pure-play” virtual university (to use the modern jargon) in that it is not in a host institution delivering face-to-face courses. Whatever the historical arguments the archetype of the open university spread rapidly round the world and modern listings give nearly 100 entries even though not all have the word “open” in the title. The “pure essence” of an open university is that it is open to anyone to enter, from anywhere, and with an open approach to curriculum – but modern political realities force compromises to be made in all these aspects under the impact of performance indicators, cultural restrictions and funding issues – so that the product is more of a base alloy – yet without, surprisingly, compromising the underlying aspirations.

The third phase of virtual universities is a more gradual change and one that is not complete even in all high-income countries – the replacement of print (and sometimes television) and correspondence teaching with internet resources and web 2.0 approaches respectively.

### Virtual schools

By a virtual school we mean a school (ISCED 2 or 3) where school-age students study online, usually at home (but sometimes in a hospital, care home or other school) for most of their study time, with physical attendance to their “base school” very much in a minority. This modality is not only for students in island or mountain regions who find it difficult simply to go to a place of learning. It is also for students who are ill, scared of school, or unable/unwilling to access the school for some other psychological reason. It can also serve students who want to take subjects (not only STEM subjects) which they cannot access in their local school, and of course young people even in custodial situations may want to improve their life chances.

Virtual schools are an increasingly important alternative for these students and are becoming more and more prevalent all over the world. They are plentiful in North America (both USA – over 500 – and Canada), and significant in Australia New Zealand, Asia and Latin America. They are surprisingly prevalent in Europe despite restrictions (to be discussed later) – around 100 on current estimates. They are much less prevalent in Africa (which is understandable from the requirement for good online access from home), but more surprisingly they are not common in island regions (such as Oceania and the Caribbean) even where communications are effective.

## LESS SUCCESSFUL PRACTICES (SO FAR)

Again we have to remind readers that we are taking a helicopter view, looking at approaches which typify whole institutions, not pedagogies on specific courses.

### Virtual colleges

By a virtual college we mean a post-secondary non-tertiary (i.e. non higher education) institution (ISCED 4) where students study online, usually at home but sometimes at their place of employment, for most of their study time. The students are adult (or at least beyond the age when childcare should be an issue).

Strangely, there are far fewer virtual colleges in the world than virtual institutions of the two other main types and they seem to be much more struggling. There are several reasons for this, different in different countries:

- vagueness of definition, defined more by what a college is not than what it is – and there is no consistent definition across countries
- general policy and financial neglect of the college sector by political elites
- over-regulation, leading to suppression of IT-based innovation as “too risky”
- talent-drain to universities, not primarily of staff, but as successful colleges are “elevated” to ISCED 5 (usually 5B) status

Only in a few countries (e.g. US and Scotland, maybe Australia) where colleges are more integrated with ISCED 5 are these issues, to some extent, solved. It is also helpful that in a few countries policy-makers are beginning to reconceptualise the college modality, e.g. the University Technical Colleges in England (Baker Dearing Educational Trust 2012).

### Blended learning

Blended learning is education that combines face-to-face classroom methods with computer-mediated activities. According to its proponents, the strategy can provide a more effective education while avoiding the “loneliness of the long-distance learner” that can occur in purely virtual institutions. According to its opponents, it just costs more (classroom costs plus IT costs) without clearly delivering more. One challenge is that there is no consensus on the definition of blended learning or even on its name – the terms “blended”, “hybrid” and “mixed-mode” are used interchangeably.

In the “days of abundance” which, in much of the world, typified university planning in high-income countries until the end of the last decade, this dilemma was not acute. It is now much more intense. How can one make a business case for injecting IT into the classroom situation when the research evidence on learning gains is so contested? If one cuts occupancy of lecture theatres (to save costs) does one imperil the campus experience and the brand values of the institution delivering this? If one replaces face-to-face interaction with tutors with internet-mediated interaction with tutors (e.g. via forums), does one actually increase tutor time (and perhaps tutor cost due to higher skill levels needed)?

Even attempts to run a pure-play virtual institution alongside a blended campus institution as a so-called “dual-mode” institution seem somewhat unsuccessful in many countries (except Australia) despite the optimistic literature.

### Resource-based learning

This is not a Policy Brief about MOOCs but it is necessary to mention them. Drawing with care on Wikipedia resources, one can define a massive open online course (MOOC) as a type of online course aimed at large-scale participation and open access via the

web. MOOCs are thought by most to be a recent development in the area of distance education. MOOCs typically do not yet offer credits awarded to paying students within a national quality frameworks for universities.

MOOCs originated from within the open educational resources movement with some aspects of connectivism (Siemens 2004) grafted on. However recently a number of MOOC-type projects have emerged to public gaze, such as Coursera. The prominence of these projects' founders, contributing institutions, and investment helped MOOCs gain significant public attention in 2012. Some of the attention behind these new MOOCs centre on making e-learning more scalable, more sustainable or more profitable (generating more surplus as a non-profit institution would call it).

While there is no commonly accepted definition of a MOOC, two key features seem prevalent:

- Open access. MOOC participants do not need to be registered students in a university to “take” a MOOC, and are not required to pay a fee.
- Scalability. Most traditional courses (even online ones) depend upon a small ratio of students to teacher (often around 20:1), but the “massive” in MOOC indicates that the course is designed to support an indefinite number of participants with just a few teachers. Of course there are a few truly massive courses but increasingly many MOOCs are much more the size of other large online courses in universities – though with far fewer teachers

Clearly to achieve this some pedagogic compromises have to be made. The first is that, as in open universities from their beginning, there is a much greater focus on resources. Several MOOCs look like, or indeed are, a large Wikipedia-like wiki, with various other tools grafted on. While resource-based learning has many advantages from the point of view of a provider (in particular, far lower running costs even if the capital costs are high – and they may not be high if OER can be used), there is an extensive literature on the problems this modality causes learners, either teenager or adult, if there is not adequate tutorial support. Despite the literature, it has to be said there are still some virtual institutions, including some public providers, who provide very little or no tutorial support on many of their courses.

### **Automated assessment**

A related approach to reduce the teaching “burden” (a telling phrase) on institutions is to replace human-based assessment (whether for credit: summative – or for feedback: formative) by automated assessment. Again, some open universities have been doing this for years but in conventional institutions many teachers and professors are resistant to this approach, perhaps fearing for their jobs, while at the same time complaining vociferously about the assessment “burden” (that word again) on them. At long last, developers are managing to push beyond the limitations of multiple-choice assessment (however elegantly provided) to which the technology has been restricted for over 30 years, but such forays, while found in some high-profile MOOCs, are still relatively rare. Given the concerns expressed recently on the level of thinking skills that students have (Arum 2011), and the need for much more practice in essays (longer textual assignments), the technology limitations are still of great concern.

### **Open Educational Resources and Practices**

This is clearly an emerging practice group but it is rather soon to say what the best institutional practices are within that group or which have archetypal potential. Open Educational Resources (OER) are defined by UNESCO (2012) as “teaching, learning or research materials that are released with an intellectual property license that allows for

free use, adaptation, and distribution”. Open Educational Practices (OEP) are defined by ICDE (nd) as “practices which support the production, use and reuse of high quality open educational resources (OER) through institutional policies”, but then goes on to talk about policies “which promote innovative pedagogical models, and respect and empower learners as co-producers on their lifelong learning path” which have rather little to do specifically with OER and which precede OER by decades.

The OER definition with all the multiplicity of license options and impassioned debates about “no commercial” clauses is not simple and compelling enough for an archetype. Students have a much simpler definition: “stuff I can use” – not “stuff I am allowed to use” – and not even “stuff I can reuse” unless it is textual resources to paste into an assignment. The LUOERL report (Bacsich et al 2011) is eloquent on this.

## THE FIVE ARCHETYPES AND THEIR ADVANTAGES AND DISADVANTAGES

The methodology for developing these archetypes owes nothing to the recent literature since we could find no relevant literature on methodologies – however, a number of the archetypes have been seen before or come out of business models work. The author is however indebted to the e-university analysts and pioneers of the 1997-2002 era, most of whose work on business models is now forgotten or even unavailable (but see Thompson 2001 and Curry 2001). The work done over many months for the retrospective on HE Change Management (Bacsich 2012b) was also very helpful.

In summary, after a period of reading and reflection, a presentation on “Alternative Models of (Formal) Education Delivery” was prepared for and presented at a workshop at the EFQUEL Innovation Forum in Granada on 6 September 2012. After discussion at that workshop and during the conference, and then via individual discussion at the ALT-C conference in Manchester on 11-13 September 2012, a revised presentation with five archetypes was prepared, loaded to Slideshare (<http://www.slideshare.net/pbacsich/archetypes-of-formakl>) and opened for comment via Twitter, Facebook etc.

Neither version generated much comment, which is not that surprising given the disconnect between those who think (or used to think) about business models and those who think about pedagogies. But no major criticisms have surfaced via online or face-to-face interaction either.

So without further ado we present the five archetypes.

### 1. Handheld Primary (ISCED 1)

Features:

- Each pupil gets a handheld with age-related capabilities
- Teaching is focussed round it – still with teachers – but not teaching the same way
- Low-cost fee-paying school (which might still be state-supported) providing excellent quality provision
- Existence proof: there are many low-cost private schools but with no IT – adding IT is a natural next step

Advantages:

- Socialises children into appropriate professional use of IT
- Fees (even if low) provide a stable revenue stream independent of government policy lurches



Disadvantages:

- Some parental concerns about over-use of IT by young children with consequent adverse health effects and distraction from traditional learning goals
- Could be seen as restricting children's freedom since handheld has locked capabilities
- Children may stigmatise the handheld as "uncool" unless the design is excellent (need to learn from OLPC and Clockwork Radio projects)

Policy shift:

- Real acceptance that (part-)private primary education has a role; move to public/private school system

## 2. Virtual Supplementary School (ISCED 3)

Features:

- Focus on uniform high-quality provision of university-entrance subjects across the nation
- E.g. STEM (including Mathematics and Physics), Computer Science, Latin and other shortage languages
- State-funded
- Each pupil has host physical school where the "common" subjects are taught
- Existence proof: US, Scotland, virtual schools for expatriates run by many countries

Advantages:

- Cost-effective approach
- Finesses the issue in many countries whereby governments insist that children up to 16 must be actually "in" school – thus suppressing or severely restricting the growth of virtual schools

Disadvantages:

- Some will argue that distance online provision is not as good as face-to-face – some will always argue that
- Some problems in handling laboratory work – but there is provision for home experiment kits (as used by UK Open University and US providers) and remotely monitored lab work in the host school backed up by simulations

Policy shift:

- needs per-course not per-pupil school funding – feasible
- needs countries to stop ignoring poor provision of schooling in remote regions and poor urban areas – less feasible

## 3. OER C (OER College – ISCED 4)

Features:

- Massive use of OER (if relevant) and automated and peer assessment to deliver "trade" qualifications at low cost which have international or vendor certification (in IT e.g. from Cisco, Microsoft etc)
- Fosters acceptance by government by regular correlation of teaching and assessment approach with external test results (from Cisco etc)
- Existence proof: A number of start-ups are targeting the "lucrative" HE market but making it hard for themselves by challenging or ignoring the quality police (both strategies unwise – the above strategy circumvents it)



## Advantages:

- Circumvents the HE quality issue (because it is not an HE institution) which affects OER and similar providers but still targets those skills demanded by employers

## Disadvantages:

- Not an HE institution so will tend to be ignored both by government and venture funds (except in US and possibly UK)

## Policy shift:

- This modality just needs governments to admit that ISCED 4 (non-HE post-secondary) exists as a viable sector – and to “care for it”

## 4. Multiversity (ISCED 5B or maybe low-rank 5A, with links to 4 and 3)

This model has had more development than the others since it was originally formulated for an EU study in 2011 and was discussed extensively with many colleagues during the author’s study trip to New Zealand in 2012.

The model is archetypal because in many ways it is what polytechnics used to be in several countries before generous funding and pressures of research assessment led them into a quest for research ratings with consequential less focus on teaching.

## Features:

- Broad-spectrum yet full university range of work/features
- Good teaching is praised and rewarded
- Scholarship and reflective practice is compulsory and audited
- Research is optional (and not subsidised by teaching)
- Multi-mode according to student demand: pure distance learning, hybrid distance and face to face (e.g. weekend schools, summer schools), traditional blended learning (if it can be cost-justified);
- Multi-site if need be
- Generates “liberal arts” thinkers who are “(e-)business-ready”
- Joins with other universities and employer groups to oversee school-leaving exams in an international perspective on qualifications after school (International Baccalaureate) and university (e.g. HE Olympiads?)
- Links with international partners to lobby governments and set up transnational quality regimes to finesse ranking and price snobbery
- Covers polytechnic (university of applied science, university college) and post-secondary college areas synergistic with the core mission (Cisco Academy, fashion design)
- Bridges into and from upper secondary school, so as to minimise drop-out and “lock on” to schools-level knowledge, thus allowing seamless transition, lower drop-out and accelerated degrees

## Advantages:

- Highly cost-aware thus low fees or low government funding per student-course
- No hidden subsidy for research – any research done is transparently charged and paid for

Disadvantages:

- governments without a national final-exam system for schools may struggle to implement it, but there are other reasons why governments need such a system (PISA, STEM etc) including managing the transition into HE and minimising drop-out

Policy shift:

Governments need to:

- get away from research as a proxy for teaching quality (it is often negatively correlated with that)
- understand that the impending open access regime means the decline of nationally bound university-industry links

## 5. eOxbridge

The reason for including this archetype is to demonstrate to policy-makers that (even) the top universities in their continent, country or region can also be transformed – re-engineering is not just for the “other universities”

Features:

- A set of specialised institutions – “research colleges” – with common support operation “shared service”( HEFCE 2011) to reduce costs without impacting differentiation
- A focus on the campus as the core but not the only locus of discourse – “near-distance learning” spreading to Halls of Residences and to/through the town
- Research-informed teaching without the distraction of access agendas (these are dealt with in virtual schools) – thus allowing
  - A “freshmen research” culture
  - Problem-based learning
  - Accelerated learning for gifted and talented

Advantages:

- Preserves the essential values and modalities of the top university
- All-through Masters (3 years in England, 4 elsewhere)

Disadvantages:

- Only to those who do not want change

Policy shift:

Governments must stop acting “hands off” to top universities when it comes to quality and funding issues

Governments must realise that they can commission research from other than their own top universities; in particular:

- from top universities in other countries
- from government or quasi-government research institutes (which work in some countries – e.g. Fraunhofer Labs in Germany – even if not in others)
- from decentralised teams of researchers in NGOs and companies (a national version of the EU Framework Programme)
- from citizen researchers including by crowdsourcing techniques

These routes all becomes easier as open access spreads, so that all researchers inside and outside the country have access to research journals.

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The key goal of this Policy Brief is to produce a number of alternative models of education delivery in the formal education sector. It was felt that the creation of five alternative models would sufficiently populate the various subsectors of formal education. The models have to be “archetypal” in the sense of being easy and quick to describe, memorable, repeatable to others without distortion, and translatable into other languages. In practical terms they should also be generalisable, scalable, sustainable, deployable without further research, and deliverable in most high-income economies. For each model the features, the advantages and the disadvantages are outlined, followed by the policy shifts (if any) necessary to facilitate their development. The models described are an ICT-rich primary school, a virtual supplementary school for specialist subjects (e.g. science), a college model based on OER for trade skills, the Multiversity (a 21st century reconceptualisation of the 20th century polytechnic/university of applied science) and a support/network model for research-intensive elite universities.

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