The Emergent Learning Model; using the informal processes of learning to address the Digital Agenda for Europe

Fred GARNETT, Nigel ECCLESFIELD *

Abstract: Since the advent of Web 2.0, which established the participatory web as a platform, we have been involved in rethinking how we might design and support learning to match the potential of this possible new web-based world of education. In our Open Context Model of Learning (Luckin et al 2010) we captured what we had learnt from theory and web-based learning projects, arguing for a model of "informal e-learning", and for fresh thinking about pedagogy in terms of both andragogy (collaboration) and heutagogy (creativity). We thought this provided an opportunity to rethink the contexts in which learning might take place in the 21st century, as education could be released by the potential of new technology platforms and tools. For us Web 2.0 highlighted the informal social processes of learning over the institutional, formal processes of organising the institutions of education, which raises ethical, cultural and social issues concerning how we might design new contexts of learning. When the EU identified that, post-Bologna, we should look to integrate informal, non-formal and formal learning, we found this inspiring and wrote the Emergent Learning Model (ELM), to both capture what we knew from our own work with informal, non-formal and formal learning and also to be socially inclusive. ELM builds on the Open Context Model and is an attempt to be a learning design tool, what we call a "development framework" for the Digital Agenda Post-Web2.0. We will discuss its origins, the "development framework" we created and how we have used it in designing new learning projects Ambient Learning City & WikiQuals

Keywords: informal learning; Bologna Process; Emergent Learning; Web 2.0; andragogy; heutagogy

I.   CHAPTER I

The Emergent Learning model is an attempt to take what we, and others, have learnt in using the participatory tools of Web 2.0 and applying them to learning. The Learner-Generated Contexts Research Group gathered some of these ideas together in the Open Context Model of Learning (Luckin, 2010). A key dimension of this work was that we were interested in learning as a self-determined (heutagogy) and self-managed process, rather than something that occurred after students were presented with a formally-mapped out and pre-determined syllabus

* London Knowledge Lab, University of London, Emerald Street, London, UK, JISC, Brettenham House, London, UK ,
Fred.Garnett@gmail.com, Nigel.Ecclesfield@jisc.ac.uk

designed to prepare for a precise, and limited model of formal accreditation. We wanted to open up education systems to the serendipities of self-directed learning in various contexts both within and beyond the classroom.

Bernie Dodge (1995), in developing WebQuests in 1995, had started by asking the question "is surfing (the web), learning?" As a consequence of answering this question his WebQuests marry a formally structured question and assessment process (the rubric) but allow for the emergent properties of surfing, that is browsing the web, to be a part of the learning process. Once Web 2.0 (O'Reilly, 2005) came along a decade later, with its more participatory ethic, its inbuilt interactivity, content creation tools, and massive cloud-based capacity for hosting resources, then the emergent aspect of learning allowed and designed for in WebQuests could be Web 2.0 can be seen as what Steven Johnson (2010) calls an "adjacent platform" for innovation. This self-directed learning and the serendipity and opportunities in reveals hasn't been allowed in formal Education, for many reasons. It was why we wrote the earlier Open Context Model of Learning, to offer a range of new pedagogical possibilities for a world of potentially "open" education.

However we realised that for innovation in education to take advantage of the potentials of emergence, interactivity and resource abundance that are on offer in a Web 2.0 world of learning, then we needed to create what we called a "development framework" to help the design of education innovations.

1.   Development Frameworks

In towards an organisational Architecture of Participation (Ecclesfield and Garnett, 2008) reviewed the process of working on developing the "e-mature" organisation. This was based on a national UK project to make colleges more e-learning ready called E-Maturity For Further Education (EMFFE). This involved moving colleges from a known organisational structure, into an unknown one, based on the use of unfamiliar, but widely available, network technologies. Our view was that the traditional method of quality improvement, benchmarking against existing best practice, didn't work when you were promoting new, and innovative, practice. Consequently we created an approach based on a "development framework" which models sequences of both existing practice and future potentials within networked organisations, using this a partial framework to scaffold a range of organisational possibilities. The degree of network connectedness of education colleges was seen as providing the "adjacent platform" for developing innovative, or new, e-learning practice in an educational context.

The point of the "development framework" created for EMFFE was to show educational institutions a range of potential practice, which they could decided to act on, or not, in line with their own existing strategic policy and organisational practice. Ideally they would incorporate elements of the development framework into their long-term strategic plans as part of the future design of their educational institution.

2.   Emergent Learning Model as a 'development framework'

A key distinction of learning since the web altered the availability of learning resources is that we are now in an age of learning resource abundance. Unfortunately both existing educational practice and institutions themselves were designed in eras of resource scarcity. When lectures began at the University of Oxford in 1096 they only had 30 hand-written books, each of which was locked away in a central depository, the original university library. A lecture was then, and still remains, an exercise in the mass copying down of the, once exceptionally scarce, resources of a text book, which heavy tome was rested upon a lecturn so it could be read from, aloud. Learning was, originally, merely remembering what was in the very rare text book. Modern librarians, however, began as experts in information retrieval, once printed books had begun to proliferate after the invention of the printing press. Now, in the 21st century, thanks to the online availability of learning resources since the advent, in the UK, of the NGfL (1997) and FERL (2000) and, in the USA, OCW (2002), as well as various newer open resource initiatives, such as Wikipedia, (2001) and Khan Academy (2006), we have an abundance of easily accessible learning resources online. However we lack both new educational practices and new participatory organisations with which to deploy these new resources in this era of resource abundance. So we have the curious anomaly of the newly available abundance of learning resources being deployed in educational institutions with practices designed to solve the problem of resource scarcity. However the problem of resource abundance, triggered by the same affordances of the Web that lead to the development of WebQuests in 1994, is compounded by the affordances of Web2.0 which further offered both content creation tools, like blogs (and collaborative wikis) and, perhaps more importantly educationally, content curation, such as Pinterest but, in our opinion, best captured in pedagogically sound resource platforms like xtlearn (2011) and Bibblio (2014).

The thought behind the Emergent Learning Model as a development framework was how to solve this problem; how to design *new* educational practices appropriate for a world of *resource abundance*. We thought we could do it by creating a development framework to help with designing new educational practices, in both new and traditional learning contexts. As with WebQuests we thought we could consciously design learning processes to reflect the emergent practices of learners, rather than designing for institutional needs, and that a development framework for learning could be created that reflected a learner-centric approach (Luckin, 2008).

1.3   Emergent Learning Model and the Bologna Process

However a key factor in creating a development framework for post Web 2.0 emergent learning was the proposals from the EU to follow the Bologna Process, which was concerned with harmonising formal University degrees across the EU, with a plan to further integrate all aspects of formal, non-formal and informal learning into that harmonisation. We found this proposal particularly interesting because earlier work, such as the Open Context Model of Learning, suggested that informal learning was being transformed by the Internet and the Web in such a

way to suggest that it could also transform formal education. We believed that post-Web 2.0 well-designed informal learning processes could now drive formal education outcomes. However it was clear that the EU took the opposite position, namely that all education structures across the EU could be harmonised by integrating informal and non-formal learning into existing formal education structures. In other words the EU had completed missed how learning had been transformed by the shift to resource abundance during the time that the Bologna Process itself was being implemented across Europe (1999-2005).

II.   CHAPTER II

The critical element in creating a development framework for the emergent learning we were seeing post Web 2.0, and which could also be linked to a post Bologna Process concerned with integrating informal, non-formal and informal learning, would be to redefine what we understood by informal, non-formal and informal learning in light of what we had learnt post-Web 2.0

1.   Elements of the Emergent Learning Model

Our belief was that educational institutions in a period of resource scarcity, design for the institution first, and then deploy resources on an institution-centric basis; courses, staff and resources, then students. We had seen from emerging learning practice (Luckin, 2010) that we could design for learner-centric learning and support the practice of emergent learning (Hase). Consequently we could flip the traditional organisational sequence in educational practice of Institution / Resources / Learner and design for a Learner / Resource / Institution sequence. This gave us an approach that would allow us to integrate, or link, learning across informal, non-formal and formal sectors of learning, whilst still referencing how formal education worked. Consequently we will examine how we might most usefully think about learning, by trying to tease out how we might best describe its informal, non-formal and formal characteristics.

Informal Learning has often been seen as learning we do in our free time outside of institutions. What we choose to learn informally usually comes from our own interests. Historically this has often found to have been located in libraries, sometimes described as 'street-corner Universities' because of the ready availability of reference books for fact-checking, of text-books, for subject-based understanding, of non-fiction books, for a broader understanding of the world, and of novels, for descriptions of the lives of others. But it has also been seen as a key part of community or adult learning, that is as long as managerial targets related to formal assessment processes aren't added to that traditional process (in the UK) of learning in the community.

For the purposes of the Emergent Learning Model we wanted to focus more on the aspect of the interests of individuals and also to foreground the social process of learning. Sugata Mitra's recent 'Hole in the Wall' (Mitra, 2012)

work is so successful with learners because he cleverly foregrounds the social process of learning by using access to learning resources as a framing device (*resources are how we scaffold learners* as it is described in the ELM table). Mitra designs for social processes to emerge as a pre-condition of his work, which is the essence of informal learning. It has been said that you can't design for informal learning, but we actually do design for informal learning for much of the time in educational institutions, because the *social* processes of informal learning are in many ways the pre-condition for *formal* learning outcomes to emerge.

So for the Emergent Learning Model we will define informal learning as;

*Informal Learning is the **social** processes that support self-organised learning in any context*

Non-formal learning; when working on the Metadata for Community Content project which, in part, was looking at how we might create socially inclusive (or 'digital divide') **content** for informal, or 'community' e-learning, we concluded that we were working on a project concerning non-formal learning, which we defined as '*structured learning opportunities without formal learning outcomes'*. (Cook, 2002) Arguably this was because we were working in the context of what is now named as Adult & Community Learning (ACL) in the UK and we were concerned to identify learning content that would better engage disaffected learners; to structure their learning interest. Based on an adaptive model of resource creation that we termed the *model of informal e-learning*, which was a dynamic co-creation model of learning, we identified a process of resource creation that responded to learner's interests whilst removing the institutional power relationships of educators from the learning process.

We developed a learning model (Garnett, 2006) in which content creation toolkits would be the primary tool needed by teachers, for which the learning resource website aclearn.net was originally built to support, and such learning content, supported by a range of resources such as people, was capable of brokering learning processes. Consequently we have come to see the structuring of learning opportunities through resources, something that OERs do not support, as the key process in non-formal learning. (The co-creation dimension of this process suggests that learner-generated *content* can have as much value as educator-generated *content*, for certain aspects of learning - as suggested by the Russian concept of *obuchenie*)

So for the Emergent Learning Model we will define non-formal learning as;

Non-formal learning is structured learning resources without formal learning outcomes.

Formal Learning means, for us, education as a system, rather than learning as a process, whether it be academic or vocational, and which is concerned with the institutionalisation of processes surrounding learning. This may be a process that prepares people for University, those secular storehouses of knowledge;

- Primary school prepares us to be learners as defined by formal education,
- Secondary school assesses if we have become good enough learners to become students,
- University is where fully accredited learning finally takes place.

People who 'fail' this academic sifting process are offered vocational education so they can acquire a socially useful set of skills,

People who also 'fail' vocationally are expected to be sufficiently 'literate' to converse with the system that failed them.

People who *succeed* in this process obtain various forms of accreditation and qualifications to prove they have 'learnt.' In many cases enough learning goes on for this system to be able to replicate itself successfully, even adapting to new social norms that are laid on top of it (academies, free schools, etc). The most significant part of the institutionalised formal education system are the institutions themselves. What formal learning, or education, has really become specialised in is maintaining itself as a set of institutions and buildings. But this is done to enable them to offer accredited qualifications to students, the essence of formal learning, rather than just to maintain their buildings and location.

So for the Emergent Learning Model we will define formal learning as;

Formal learning is the process of administering and quality assuring the accreditation of learning with associated qualifications

2.2   Emergent Learning Model

What we aim to do with ELM is to take the current notion of formal learning as being a process of accreditation (even one that has been harmonised by the Bologna Process) that occurs within an institutionally constrained and hierarchical system, and replace it with a series of processes that better matches how people actually learn, follow their interests, collaborating freely and finding resources that meet those interests, or learning needs. It is far less about serving the institutional needs of academia and more about meeting the needs and interests of individual human beings.

ELM also tries to take account of, and respond to, much of the new thinking about learning and much else, done by many in the last twenty years; emergent properties, network effects, systems design, etc., in response to the permanent beta which is everyday life, what happens whilst you are making plans as John Lennon once put it. Which is not to deny that the requirements of studying different subjects vary and that people have different capabilities, which present a range of issues that need to be addressed within an education system. Nor that a Ph.D isn't much harder than a school leaving qualification, or that devising modes of assessment and accreditation that reflect the quality of learning undertaken isn't tricky and requires experience, sense and tact. But we have learnt a lot about the practical concerns of recognising learning and we now have the opportunity to reflect on what we have learnt, and perhaps even devise new systems of learning; which is what we are trying to do here.

So the underpinning idea of the Emergent Learning Model is that we should start with the social processes of everyday life, and design a system that enables learning to emerge naturally, rather than to respond to the hierarchical structures of large academic organizations. We should equally value the professionalism of the teacher

and the desire of the learner, and create resources that enable those interests to merge. Because people can be the resource with which we scaffold institutions.

EMERGENT LEARNING MODEL					
INFORMAL PEOPLE as	**INFORMAL** PEOPLE as	**NON-FORMAL** RESOURCES	**NON-FORMAL** RESOURCES	**FORMAL** INSTITUTIONS	**FORMAL** INSTITUTIONS
Individuals	Social Groups	Created	Provided	Adaptive	Accredited
Groups	Audiences	Learning Sequences	Learning Resources	Home	Classes
Aggregations	Groups	Web 2.0 Tools	Set texts	Library	Units
Individuals	Channels	Media Templates	TV Programmes	Community	Qualifications
«ADMIN	ACCESS»			«SCAFFOLDING	ADMIN»
LEARNING	>			<	EDUCATION
	Learners learning skills; a) organising people collaboratively b) accessing resources		**Teachers** teaching skills; a) structuring resources b) brokering accreditation		
	Supported by; Trusted Intermediaries		Supported by; Tools & Skills		
People are how we scaffold organisation		Resources are how we scaffold learners		Institutions are how we scaffold accreditation	

Table 1. Emergent Learning Model

2.3   Reading the Emergent Learning Model

The Emergent Learning Model (Table 1.) is designed as a heuristic, an aide memoire, to capture as much of learning and education within a single table in order to facilitate reflection and discussion on how we might design, support and implement models of learning rather than simply reproducing the traditional structures of institutionalised education; which do have excellent qualities in administering paper-based record-keeping systems. To show that

formal education and informal learning are intimately connected you read the table from *right* to left to understand the formal education system, and from *left* to right to understand informal learning processes.

a) *education*; is a process organized by institutions who offer qualifications based on set texts to be used by learning groups in classes to meet accreditation criteria. Teachers provide resources and broker these educational processes to students at those institutions.

b) *learning*; is a process of problem-solving carried out by people individually or collaboratively by finding resources and discussing the issues that emerge with people who are trusted intermediaries.

An underpinning value of education and learning is the contrasting views of the learner, in an *education* system the processes are designed with the belief that learners don't want to learn and need extrinsic motivations; what might be called a social capital model of education. A *learning* system is designed around the belief that learners are interested in their learning and only need intrinsic motivations. Extrinsic motivations may be needed to create an engagement in learning that isn't initially interesting, and which trusted intermediaries, or friends, are capable of addressing.

III.   Conclusions

We believe that ELM is a development framework of interest to the EU and a heuristic design tool for learner-centred design. Whilst we believe it can be used for designing learning in traditional institutions, we have only used it for designing informal learning ecosystems for the Ambient Learning City project, MOSI-ALONG, in Manchester (2011) and in the WikiQuals self-accreditation project (2012), which was first developed at the University Project (2011), and is ongoing.

1. Because learning is emergent, that is it reveals non-linear dynamic processes, the Emergent Learning Model has been developed to allow for the comparison and integration of informal and formal approaches to learning, and is really useful in designing informal dynamic learning ecosystems.

2. In the large-scale and dynamic Ambient Learning City project, it was found that whilst ELM was extremely useful in the planning stage of learning, unanticipated problems emerge in the implementation phase which need the further development of original techniques and processes, such as new metaphors, and a social media model Aggregate then Curate (Whitworth 2012).

3. In the WikiQuals project it was found that ELM was helpful in the design stage but that furthers issues arose during implementation. As this was a small-scale learner-centric project it was also important to establish the "set of social practices" (Serbu, 2013) that it was organised around.

4. Because the Emergent Learning Model is a tool for the design of learning which allows for emergent properties to be revealed there must always be a secondary design process to solve the new problems which emerge in developing non-institutionalised learning systems.

References

Dodge, B., 1995. Some thoughts about WebQuests. http://edweb.sdsu.edu/courses/edtec596/about_webquests.html Accessed February 5, 2015

Bibblio, 2014. http://bibblio.org/about, Accessed February 5, 2015

Cook, J., *et al*., (2002) 'Informal eLearning Communities: the UK online perspective', *2002 International Conference on Computers in Education*, Auckland, New Zealand, pp. 499–509

Ecclesfield, N., and Garnett, F., 2008. "Colloquium; Developing an Organisational Architecture of Participation" *BJET* 39 (3) pp 468-474

Garnett, F., 2006. Some issue to address in contextualising learning resources. http://www.slideshare.net/fredgarnett/context-modelling-for-learning-some-heuristics HEA Academy keynote, Accessed February 5, 2015

Garnett, F. and Ecclesfield, N., 2009. Paper Proposed model of the relationships between Informal, non-formal and formal learning. *IADIS-CELDA*, Rome.

Johnson, S., 2010. Where Good Ideas Come From: The Natural History of Innovation, Allen Lane, London

Luckin, R., 2008. The learner centric ecology of resources: A framework for using technology to scaffold learning. *Computers & Education*, 50 (2). pp. 449-462. Elsevier, London

Luckin, R., et al 2010. Learner Generated Contexts: A framework to support the effective use of technology for learning, in Lee M., Sturt C. and McLoughlin C. (eds.) Web 2.0-Based E-Learning: Applying Social Informatics For Tertiary Teaching. IGI Global, Sydney

March, T., 2003/04, The Learning Power of WebQuests. http://tommarch.com/writings/ascdwebquests/ Accessed February 5, 2015

Mitra, S., 2012. Beyond the Hole in the Wall, TED Books, New York

MOSI-ALONG, 2011. Project Blog, https://mosialong.wordpress.com, Accessed February 5, 2015

O'Reilly, 2005, What is Web2.0 http://www.oreilly.com/pub/a/web2/archive/what-is-web-20.html, Accessed February 5, 2015

Serbu, V. 2013. Functions of Social Media in Higher Education: A Case Study, in Pătruţ B. Pătruţ M. and Cmeciu C (eds) Social Media and the New Academic Environments, IGI Global, Hershey

The University Project, 2011, Project Blog

http://univproject.pbworks.com/w/page/45692087/The%20University%20Project Accessed February 5, 2015

Whitworth, A., Garnett, F., Pearson, D., 2012 Aggregate-then-Curate: how digital learning champions help communities nurture online content. *In Research in Learning Technology*, [S.l.], v. 20, dec. 2012. ISSN 2156-7077

Wikipedia, 2001. http://en.wikipedia.org/wiki/Wikipedia, Accessed February 5, 2015

WikiQuals, 2012. Project Blog http://wikiquals.wordpress.com, Accessed February 5, 2015

Xtlearn, 2011. https://www.xtlearn.net/Info/NLN.aspx, Accessed February 5, 2015