

Using “Liminal Spaces” for Web-Based Collaboration and Enhancing Learning

Katya Toneva

International Community School
London, United Kingdom
e-mail: katya147@yahoo.com

John Cuthell

Mirandanet Academy
London, United Kingdom
e-mail: john.cuthell@mirandanet.ac.uk

Abstract—The informal dynamic knowledge creation in collaborative contexts occurs as participants move from textual communication in a conventional mailing list to blogging, wikis contributions, online video conferencing and other collaborative web environments. Web 2.0 collaborative technology can be seen as creating a “liminal space” – a passage, in which a person moves from one state of being to another. Participants in this liminal space are transformed by acquiring new knowledge, a new status and a new identity in the community. This change is of critical importance if learning is to be successful. This paper aims to extend understanding of liminal spaces and their contribution to the learning process. Evidence from participants (students and teachers) from the International Community School, London, UK and other schools across the world is used to estimate the value of liminal web-spaces (within the global collaborative Flat Classroom Project).

Keywords—*liminal spaces; Bricolage; Flat Classroom Project; social constructivism; collaborative learning; informal and formal learning*

I. INTRODUCTION

In the Autumn term 2011, the International Community School (ICS), London, took part in the global collaborative Flat Classroom Project [1]. The Flat Classroom Project (FCP) is featured in Thomas Friedman's book “The World is Flat” [2].

The general goal of the project outlined in [1] is: “to 'flatten' or lower the classroom walls so that instead of each class working isolated and alone, two or more classes are joined virtually to become one large classroom. The project is designed to develop cultural understanding, skills with Web 2.0 and other software, experience in global collaboration and online learning, awareness of what it means to live and work in a flat world, while researching and discussing the ideas developed in Friedman's book.”

ICS took part in the global Flatclassroom on the specific topic: “How ICT could improve people’s lives”. This was linked to the English curriculum. The idea was that students could develop their English language proficiency and academic language skills via the FCP activities. The final product, published at the FCP web-site, was in the form of a video storyboard.

The students used a range of web technologies to complete their project: an educational online network, ning web-site, blogs, photo and video uploading, and a wiki, to create their profile and build a web page on their topic. In addition, they used Elluminate web-conferencing software to showcase their learning.

These collaborative technologies create a liminal space – a term drawn from anthropology that describes a rite of passage, in which a person moves from one state of being to another. In the virtual Flatclassroom participants are observed to be transformed in this liminal space by acquiring new knowledge, a new status and a new identity in the community. If learning is to be successful, this change is of critical importance. Whilst remote and informal learning is largely what has been understood about mobile learning, the concept can now be extended to include these informal spaces in which learning takes place – the liminal spaces that those who push the boundaries of digital possibilities now inhabit intellectually [3] & [4].

This paper aims to extend understanding of liminal spaces and their contribution to collaborative learning process. The processes can be described as a form of Bricolage [5], in which people build new knowledge from what is at hand. We will share our experience within a four month Flat Classroom Project to illustrate these processes. We hope that our case study and analysis will contribute to understanding of the concept of developing and using liminal spaces for learning.

The structure of this study is as follows: Section 2 briefly depicts the context of the project and technical requirements. Sections 3 and 4 outline the project framework and identify some constraints and conflicts. Section 5 provides teachers’ and students’ feedback in the context of using Flatclassroom approach for collaborative learning. Section 6 outlines the concept of “Bricolage” in the context of knowledge creation. Section 7 clarifies the meaning of formal and informal learning. Section 8 suggests ways for using liminal spaces for enhancing informal learning. The last section draws five 21st Century Learning Themes and summarises possible ways for relevant developments with emphasis on approaches identified in the Flat Classroom Project.

II. BACKGROUND AND TECHNICAL REQUIREMENTS

The theory and practice underlying the Flatclassroom Project described as social constructivism brings teachers and students to international collaborative activities. Social constructivism emphasises collaboration and exchange of ideas [6]. Flatclassroom online learning environment is based on Web 2.0 technologies (wikis, blogs, ning, online conferencing Elluminate tools) that support collaborative forms of learning that can encourage publications, multiple literacy and inquiry.

As suggested by Williams and Jacobs [6], Web 2.0 tools allow learners to develop new ideas, and transform their own understanding through reflection by publishing and sharing their work to a wide audience. Constructivism gives people ownership of their learning, since they are engaged through questions, explorations, and designing assessments [7].

The term 'digital technologies' also encompasses the mobile technologies movement that aims to chart the new conceptual space that Pachler et al. call the 'Mobile Complex' [8].

Our understanding of mobile learning is based on social constructivist approaches to learning. Constructivism creates a collaborative learning environment.

A learner-centred approach is the main focus in our school ICT strategy for using netbooks and Web 2.0 technologies. We have adopted the slogan "IT's not about the technology, it is about the learning" [7].

We have a Google Apps school domain. Google Apps have been used as a school online learning environment since September 2010. During 2011/12 academic year, we extended the school environment using a new Google App called "Course Director".

Teachers and students are confident using Google Apps (Google email system and Google docs). We have started pilot projects supported by other Web 2.0 technologies, such as Glogster, YouTube and blogs. For example, we had already used a blog for the E-safety Project management [9] and embedded video storyboards created by the students – this was a good initial teacher and student preparation for a web-based collaboration.

The Flat Classroom Project™ [1] has four mandatory components for students:

- An audio or video introduction posted as a blog post on the educational network (Ning);
- A written collaborative report using a wiki - Students will edit the wiki and discuss the topic on the discussion tab of the page in teams;
- A personal multimedia response (digital story/video) - Topic as assigned on the project matrix;

- A post project reflection - Students will post their reflection on the process to the project Ning.

The school has not invested in expensive and "flashy" technology to participate in the Flatclassroom activities. Our focus is not the technology itself, but how we use the technology to enhance teaching and learning.

Since September 2010, the school has provided netbooks for all students and staff with Internet connectivity via the wireless network. Students have used netbooks with Wi-Fi connectivity and free Web 2.0 technologies to complete their project tasks.

III. PROJECT FRAMEWORK

There were 16 schools and 347 students taking part in the Flat Classroom Project across the world (USA, Australia, Canada, UK, Germany, Korea, Japan and China).

We involved a DPP EFL group of six students (Diploma Preparation Programme - English Language for Learning) in the global Flat Classroom project topic "Mobile and Ubiquitous (M&U)".

The school core curriculum objectives were linked directly to our specific Flat Classroom topic "How ICT could improve people's lives". Explicitly, our English curriculum goal was: "Developing English language proficiency skills and academic language skills including:

- Researching/reading/speaking/writing skills;
- Collecting, analysing, evaluating, reporting and presenting information.

In addition, our project objectives included developing key skills such as communication skills, team working skills, using ICT tools for presentations, online collaboration and networking which also fit very well with the Flat Classroom Project approaches.

IV. CONSTRAINTS AND CONFLICTS

At the beginning of the Flat Classroom Project, there were inherent conflicts between the fluid, chaotic and inchoate nature of the Liminal Space of the ICS' Flat Classroom Project and the technical demands imposed by the need to produce high-quality resources that will be uploaded into a virtual web space to be used asynchronously. This is particularly critical when the resources are to be used by other projects (by participants from other schools). The synchronous is inhibited by the needs of the asynchronous. These constraints needed to be recognised by all participants. The Flatclassroom processes, however, are ones that are constantly evolving, both as available technologies change, and as participants become more adept at acting within and across the zones of liminal space.

For example, the students needed to contribute to wiki spaces to introduce themselves and to plan their projects. They needed to use Flatclassroom Ning space to share

examples, to communicate with other Flatclassroom students across the world and to provide peer support and feedback. The students needed to understand the principles of working online and to adopt new skills and behaviours, including: understanding security and copyright issues and developing skills for online communication, collaboration and networking. The students have found these demands much more challenging than the actual development of the final project product (video storyboards presenting their topics).

V. LEARNING: HOW; WHY; WHERE

The conventional ecosystem of learning is based on the separation of home, the school, neighbourhood, work: all of these are bound into a system. This system operates the constraints of age, class, money and expectations, all of which act as gatekeepers for the system.

We share mutual understanding that in educational projects the learning process is more valuable than the final product.

It was a project requirement for the students to create a video storyboard on their Flatclassroom topic as a final product. The technical skills to develop a video clip have been achieved easily by all participants. In the context of enhancing students' learning skills, it was more important to help students to achieve the curriculum objectives and also life skills, like communication, presentation skills and global awareness.

As part of our qualitative evaluation of the project outcomes we share both teachers' and students' reflections on the process of project development and learning [10].

For example, the ICS leading teacher has identified a range of positive project outcomes such as increasing students' confidence in communication, enriching English language vocabulary, enhancing skills for research, selecting, analysing and presenting information, global awareness, skills for providing peer feedback and support online, reflective skills and a range of technical skills.

One of the collaborating teachers (Korea) commented: "With regards to the four students that I brought to participate, the change in them around school is palpable. They are more sure of themselves, sure of their ideas, and confident that their ideas merit respect and consideration.

They are empowered to speak up, volunteer, and give suggestions within a small or large group. In essence, it's as if working with students from other cultures to come up with real-world solutions to real world problems has made these four female students see that what they do every day can contribute to something bigger" [11].

Another leading teacher (USA) shared: "I watched as these dynamic youth obliterated racial, ethnic, religious, and cultural barriers to build innovative collaborative projects ... projects, that when realized will address some of our worlds' most pressing social issues" [11].

The students appreciated the opportunity to communicate with peers across the world, to exchange educational and

cultural ideas and values and the feeling of being part of a global competition for developing a challenging project product.

A teacher from Japan commented: "As a teacher, I can definitely see the value in a well-organized project that allows us to make the students more aware of things like online behavior and safety. The added benefits, of course, are also quite substantial. Since this is a global project, our kids remain motivated to complete their tasks on time because they are out to prove themselves to the world as opposed to their teacher or classmates. In addition, the online computer skills that they acquire throughout the process will last them a lifetime" [11].

The students from ICS were excited about the opportunity to establish their identity on the Flatclassroom liminal spaces (wiki and ning), to provide and receive support from their peers online and were proud to share their final video storyboards at the FCP web-environment and to participate in the final awards for completion of the project [12].

VI. THE KNOWLEDGE CREATION PROCESS AS BRICOLAGE

Participants in the liminal space apply the instructions they have to the task in hand, and try to learn the routines as they go along. The use of the tool becomes shaped by the outcome, and the skills develop through use, because the intentional outcome is to develop new knowledge. The practice becomes one of "do-it-yourself", analogous to one in which items are taken "off the shelf" and used in whatever way the participant sees fit.

The French term for this is "bricolage" – whether for a do-it-yourself store, a builders' merchant or the act of constructing new knowledge and understanding in this way.

In "The Savage Mind" [5], Levi Strauss used the term "Bricolage" to describe the way in which the non-literate, non-technical mind of "primitive" man responds to the world around him, as someone who works with his hands and uses devious means compared to those of a craftsman, and who has nothing else at (his) disposal. Levi Strauss describes the bricoleur as adept at performing a large number of diverse tasks, with the rules of his game, always to make do with "whatever is at hand" [5]. Whereas an engineer works with concepts, Levi Strauss describes the bricoleur as working with signs, the very concrete objects with which meaning is constructed [5].

The process involves a "science of the concrete", which is carefully and precisely ordered, classified and structured by means of its own logic. The structures are "made up", and are ad-hoc responses to an environment. They establish homologies and analogies between the ordering of nature and that of society, and "explain" the world and make it able to be lived in. The bricoleur constructs the "messages" whereby "nature" and "culture" are caused to mirror each other. Levi Strauss saw bricolage as a way in which pre-

scientific societies construct a belief system which explained their world [5].

Papert [13] used the concept of bricolage in relation to the concept of “chunking” [14], a process in which knowledge is broken into “mind-size bites”, which enables new knowledge and understanding to be constructed from it. His thesis was that the use of previously learned strategies could be used as a tool in concept formation.

Levi Strauss’ explanation of bricolage and the bricoleur offers an insight that is, perhaps, applicable to Flatclassroom participants: “... a bricoleur is someone who works with his hands and uses devious means compared to those of a craftsman ... (he) has nothing else at (his) disposal. ... The bricoleur is adept at performing a large number of diverse tasks ... the rules of his game are always to make do with ‘whatever is at hand’ [5].

The process, then, is one of working from the specific (the task that must be completed) to the general (learning from that experience to apply to future experiences). The signs by which they work are those of the Graphical User Interface, with its buttons, toolbars and the ability to undo errors. The “devious means” that they use utilise a range of Web 2.0 technologies, making do with “whatever is at hand” [5]. Their work gives an account of their lives in a world where allusion, reference and quotation seem the only possibility.

The synthesis must be that learning is seen as experiential, observational and a semiotic experience. Web 2.0 applications and social software have significantly changed the way of using computers from consumption to creation. A series of studies including our Flatclassroom project have provided rich evidence of the ways young people are using technology and the Internet for socialising, communicating and for learning.

Within the Flatclassroom online learning environment, many web pages and wikis and blogs contributions bring together ideas, own images and videos or links and materials from other sources, almost like a remediation of the original source material. Using these, students create their own online identity through their own tastes and interests. In the same time, students enjoy being a part of an online team or community.

VII. LEARNING: INFORMAL OR FORMAL

Pachler and al. [8] suggest that the key defining aspect of informal learning is one of agency: that is who determines the learning goals. They view informal learning as a natural activity by a self-motivated learner. This could be in a group, without a tutor being aware of such activity; it could be either intentional or tacit learning, in response to some stimulus; it could be what they term “serendipitous”, without the learner necessarily being aware of what is being learnt.

So, who determines the trajectory and outcomes of learning – the institution, or the learner? Should learning only be intentional, or is incidental learning equally valid?

Formal learning provides the structure, signposts, and scaffolding for a beginning learner. Informal learning, on the other hand, builds on the foundation of existing knowledge, and a sense of context that provides the framework for understanding.

Some working definitions for formal, informal and non-formal learning have been provided by The European Commission on Education and Training [15]. The question of whether these are seen as a blueprint for further work, or as a way of recognising the needs and progress of the individual, rather than those of the organisation, is yet to be resolved. What is of further concern is that these definitions (and embedded assumptions) are predicated on both a utilitarian basis (recognised in the labour market and by society in general) and are restricted to adults.

“Learning that takes place in formal education and training systems is traditionally the most visible and recognised in the labour market and by society in general. In recent years, however, there has been a growing appreciation of the importance of learning in non-formal and informal settings. New approaches are needed to identify and validate these ‘invisible’ learning experiences” [15].

VIII. LIMINALITY

As the Flatclassroom participants have expanded and developed the range of technologies and affordances used in the project, so the concept of social constructivism has accommodated these and expanded into the liminal spaces that are no longer constrained by temporal or physical boundaries, and are therefore truly mobile.

The extension of social constructivism theory builds on evidence that the praxis of those participants in the liminal space of the Flatclassroom is one that constructs knowledge: “the working heuristic of discovery” [16]. They take for granted the constraints and difficulties within which they work. What they produce is a result of their discovery of the ways in which the information given, created and found, with the tools in their hands and the time available – all transmuted into their knowledge creation.

The existential reality of learning is very different from the functionalist expectations of learning yet - so much policy is predicated on limited functionalist outcomes. In this context, many young people’s transformational learning experiences outside school are now significantly different from the traditional routes practiced in school.

They build credible identities in social networking sites that are important to them, but their experience in this field rarely takes them into deeper learning stages. Is this perhaps the right time for teachers to consider the potential of Web 2.0 to create a simulating environment for informal learning through the new ways of obtaining, creating, sharing, and organising information, communicating and participating, and to take students’ social networking into a more challenging collaborative learning realm?

The following Table I presents a comparison produced by HELIOS about e-learning 2000 (e-L 2000) and innovative e-learning 2010 (i-e-L 2010) projects [17]. Furthermore, to illustrate the Flatclassroom practices, we outlined Web 2.0 liminal spaces we used to support innovative e-learning (both collaborative and personalised learning) - the third column in Table I.

TABLE I. FROM e-LEARNING 2000 TO INNOVATIVE e-LEARNING 2010 [17] AND OWN ADAPTATION BASED ON FCP

e-L 2000	i-e-L 2010	E-learning within Flatclassroom liminal spaces
Distributes consolidated knowledge	Generates new knowledge	Building collaborative knowledge via class wiki and ning spaces, YouTube, Wikipedia, Flickr.
Is still e-teaching	Is owned by the learner	Personalised learning achieved via wiki spaces; sense of ownership of project outcomes.
Is delivered by a single provider/institution	Is the result of and a tool to support partnership	Collaborative learning as a result of email and online forum communications, blogs, ning, wikis).
Ignores the learner's context and previous achievements	Builds on the learner's contexts and previous achievements	Learning based on examples stored in archives of previous projects, tagging, linking, restoring.
Depresses the learner's creativity through transmissive logics	Stimulates the learner's creativity by enhancing the spontaneous and playful dimension of learning	Encouraged creativity via edutainment (FCP video storyboards, online presentations via Elluminate web-conferencing software).
Restricts the role of teachers and learning facilitators	Enriches the role of teachers and learning facilitators	Enhanced students' peer-to-peer feedback and teachers' facilitation role via email, discussion groups, and

		Elluminate video conferences
Focuses on technology and contents	Focuses on quality, processes and learning context	Enhanced life skills for communication, collaboration and global awareness (via wikis, ning, blogs).
Substitutes classroom sessions	Is embedded in organisational and social processes of transformation	Embedded Flatclassroom learning activities in English curriculum (facilitated by FCP web-spaces).
Privileges those who already learn	Reaches and motivates those who were not learning	Ubiquitous access to Flatclassroom environment, the accessibility, flexibility and ongoing support stimulate all learners.

IX. CONCLUSION AND FUTURE WORK

A. 21st Century Learning Themes

There are five substantive themes that emerge from much of the work on 21st Century Skills. They are Collaboration, Creativity, Assessment, both of and for Learning, Knowledge Management (what we often understand as personal productivity), and the use and management of Personal Learning Networks. If these themes are to be fully realised (and deployed) by education they need to be contextualised [18], [19] & [20]. The Liminal Spaces for learning identified in this paper need to be incorporated in the building of spaces, the building of contexts and collaboration for learning.

B. Building spaces for learning

Create a 'community of learning' orientation to classroom, school and university cultures. This community approach should enhance links between learners, teachers, parents and the wider community. These liminal spaces for learning incorporate the spatial, the temporal, the social and the technological. Learners should be supported and involved in creating their own learning spaces: this is critical in contexts where social inequalities impact on the ability of learners to undertake homework. Our Flat Classroom Project case study highlighted how to build an awareness of globalisation, demographics, the capacity of technology, collaboration and personalisation into learning

contexts. These can expand learners' conceptual learning spaces.

C. Building contexts for learning

One vital element is the creation of quality learning time: the ways in which social inequalities constrain learning opportunities. Consideration must be given to the ways in which learning takes place – and the fact that repetitive exercises do not necessarily provide quality learning time or opportunities. Our Flatclassroom experience provides an example of how to redefine learning for a technology rich, diverse, 21st Century Global Environment. Teachers should be supported to learn about, and then generate expertise in, multiple pedagogies. We should also champion the use of multiple authentic measures of accountability for student learning.

D. Collaborating for learning

Incorporate a learner centred, knowledge-building conception of the learning process. Provide learners, teachers, schools and communities with opportunities to collaborate in the development of partnerships in the learning process. This can be within schools, localities, countries or internationally, and could be enhanced through online communities of practice [21]. The Flatclassroom school liminal spaces and project activities provide specific examples of how such collaboration could be achieved.

Traditional exams and testing regimes militate against collaboration, but current innovations in all fields are brought about by collaboration.

The 21st Century Learning Themes identify an appropriate way to frame this exploration of learning, and the three umbrella headings: the re-conceptualisation of the role of the teacher; the re-definition of the learning and assessment process and learning spaces and learning opportunities are, in reality, cross-integrated with the Collaboration, Creativity, Assessment, both of and for Learning, Knowledge Management (what we often understand as personal productivity), and the use and management of Personal Learning Networks [20].

We hope that by analysing our experience within the Flat Classroom Project in the context of using liminal web spaces for enhancing collaborative learning, we have enlightened the above themes.

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