



University of  
**Salford**  
MANCHESTER

# Cartoon planet: Micro-reflection through digital cartoons - a case study on teaching and learning with young people

Mendes Da Costa, C, Keegan, H and Attwell, G

<b>Title</b>	Cartoon planet: Micro-reflection through digital cartoons - a case study on teaching and learning with young people
<b>Authors</b>	Mendes Da Costa, C, Keegan, H and Attwell, G
<b>Type</b>	Article
<b>URL</b>	This version is available at: <a href="http://usir.salford.ac.uk/19280/">http://usir.salford.ac.uk/19280/</a>
<b>Published Date</b>	2009

USIR is a digital collection of the research output of the University of Salford. Where copyright permits, full text material held in the repository is made freely available online and can be read, downloaded and copied for non-commercial private study or research purposes. Please check the manuscript for any further copyright restrictions.

For more information, including our policy and submission procedure, please contact the Repository Team at: [usir@salford.ac.uk](mailto:usir@salford.ac.uk).

# CARTOON PLANET: MICRO-REFLECTION THROUGH DIGITAL CARTOONS - A CASE STUDY ON TEACHING AND LEARNING WITH YOUNG PEOPLE

**Cristina Costa, Helen Keegan, and Graham Attwell**

University of Salford; Pontydyddu  
England; Wales, UK

[c.mendesdacosta@salford.ac.uk](mailto:c.mendesdacosta@salford.ac.uk); [h.keegan@salford.ac.uk](mailto:h.keegan@salford.ac.uk); [graham10@mac.com](mailto:graham10@mac.com)

## **Abstract**

The young learners of today tend to show little enthusiasm for formal schooling. This does not necessarily mean pupils are not interested in learning or developing new skills and competences. In fact, the opposite often happens in the informal settings they belong to. Finding ways of transferring pupil's informal learning to the school setting is therefore important. This paper gives a brief overview on the development of informal learning activities to encourage young people's active reflection on their informally acquired competencies through the use of web technologies. The researchers also explore the role of the teacher, and the need of a participatory learning environment in a less formal classroom. Reflections on the experiences and recommendations are also provided.

**Keywords** - Innovation, technology, web 2.0, social learning, ICONET

## **1 INTRODUCTION**

When considering formal and informal learning, we can see that the way young people today play, interact with others and take part in the surrounding world also represents the way they learn (Brown, 2002). Whilst young learners in the 21st century are seen as being increasingly independent, simultaneously group skills are more important than ever before. Flexibility and adaptability are key to lifelong learning in a networked society, as are personalised learning opportunities (Green, Facer, et al 2005). However, such approaches may be missing from formal education where the focus on standard content, in a drive to measure and assess learning, means that sometimes there is little scope for learners to participate in school life in an engaging and relevant way. This becomes even more challenging when working with 'disadvantaged' young people, who often lack the confidence as well as the opportunities to develop a stronger awareness of the self (i.e. of their personal skills and abilities) in a supporting environment. Educational activities to encourage young learners to engage in a learning journey as well as self-reflection while mixing fun with pedagogy through web technologies can be a powerful recipe in the classroom (Passey, Rogers et al, 2004). It not only increases the level of enthusiasm, it can also boost the pupil's motivation and help create new ways of fostering learning and social engagement, and also new forms of teaching (John, 2005).

This paper focuses on the development of innovative learning activities and teaching and mentoring methodologies as part of the European ICONET Project, which is piloting a range of approaches to the recognition of informal learning in different countries and for different target groups. In this paper, the authors will consider the recognition of informal learning in the school setting, encouraging personal and joint reflection on formal and informal competencies with the use of web cartoons and micro activities supported by a hands-on, exploratory learning approach. We describe how young people were encouraged to use computers as an effective, hands-on, creative medium to develop self-awareness and engage in reflection on their own skills and competences. We also explore the advantages of giving learners access to the web and the issues to be addressed when working with young learners, and report on how this experience helped the researchers realize the potential of web-based activities to promote active engagement and reflection by young people. The importance of the presence of the teacher/tutor as a mentor to provide personalized support will also be considered as a key factor for the success of this experience. We conclude with suggestions for future research in the area of web 2.0 technologies, new educational trends and innovative practices as a contribution to creative learning experiences.

## **2 TRANSFORMING THE CLASSROOM**

Education should aim to provide a transformative experience (Torosyan, 2001). With the spread of digital media and social computing this ideal may be seen as easier to achieve. In a society where new technological innovations are released daily, creative innovation in today's education is to be expected. Yet, the panorama is somewhat different from optimistic predictions by educational theorists. According to the latest IPTS report (Ala-Mutka, Punie and Redecker, 2008), despite the wider availability of technology and the Internet, most classroom practices still fail to provide learners with innovative, creative and social approaches to augment and motivate learning. The 'educational shift', grounded on social and personalised pedagogies, as advocated by most of the literature, is still in progress (Williamson and Payto, 2009). Nevertheless, in the last decade there have been numerous policy initiatives, programmes and projects to adapt educational systems and institutions to the digital age (PLTS, 2009). Web based interactive environments can contribute to a shift in pedagogy and learning approaches. Such approaches are not new (the debate on educational change has been long running), but access to social computing offers new opportunities for radical pedagogic approaches to teaching and learning (UNESCO, 2004).

Even so, the transformation of the classroom does not rely so much on the technology as on the instigation of strategic approaches to modernising education and the willingness of the practitioners to adopt such approaches (Travers and Decker, 1999).

### **2.1 A Pedagogy of Change**

A pedagogy of change does not mean that teachers become irrelevant. On the contrary, they become more important than ever (Redecker, 2009), in providing and mentoring learning experiences. The construction of new knowledge through collaborative and cooperative activities, which are personally meaningful to the learners, are core to a pedagogy of change (Learning and Teaching Scotland, 2007). Whereas it is often argued that learning, as a dynamic process, is dependent on the learner's willingness to interrelate with his/her learning in order to develop understanding (Barr and Tagg, 1995), it is equally true that an effective learning experience is also influenced by those who help foster learning through active methodologies and personalised support.

The idea of a modern pedagogy, based on social processes, is not new. The idea that learning develops through dialogue and active processes has been much discussed, although not always practiced (Alexander, 2005). Learning relies both on granting the individual an active voice and creating an environment for collective listening and mutual support (UNESCO, 2002). That is probably one of the most radical changes the contemporaneous pedagogical approach is seeking to encourage. However, education systems are still based on an industrial age with the purpose of delivering mass-education (McLuhan and Leonard, 1967). The use of digital technologies is playing an important role in promoting change in education (Anderson, 2007). Participatory media has focused attention on the idea that teaching and learning practices have a strong social component, and that learning is a dynamic activity and naturally embedded in daily life (Bull, Thompson, et al, 2008). The interactive web not only enables collective understanding; it can also facilitate personal development and reflection through social engagement. Nevertheless, the effectiveness of learning environments is dependent more on human interaction than on technology. A pedagogy of change relies strongly on the actions of practitioners to promote such change, and also on the institutional support that is given to it. (Pritchard and McDiarmid, 2006) Equally it is dependent on the engagement of learners. Effective practices in teaching and learning rely on the commitment of both parties.

Formal education remains important. Whilst there is still a need for learning centres these centres have to become less formal, and provide different learning contexts, to remain relevant to those seeking meaningful learning opportunities (Du Bois-Reymond, 2004). This is especially true when working with 'disadvantaged' learners who may not relate to a programmatic and standardised education, but who are able to show, and most importantly, realize their potential, when engaged in different and less formal approaches to learning. A pedagogy of change could be rooted in the development of innovative learning activities, focusing on the learners' personal and collective experience, with tutors/teachers acting as guides and mentors in the construction of knowledge and the understanding of experiences in the communities and networks in which learners participate. The school of life is a good teacher, but the learning from daily activities still needs to be recognized and capitalized as part of a formal education. Social computing can help in this as it can link the school setting with other environments where learners also learn without necessarily forming part of the formal learning environment.

## 2.2 Innovative Learning Activities - Using the web to bridge learning (formal and informal)

In the recent years there has been a growing acknowledgment of the importance of informal learning (Cross, 2007; Attwell 2007). Life experience is recognised as relevant to personal and professional development, with lifelong learning taking place in a variety of scenarios and settings. Competences and skills are developed through experience and social interactions although frequently are not formally accredited as they remain outside the formal curriculum (Burley, 1990). This can demoralize and alienate those who fail to achieve formal academic qualifications but still possess skills and competences achieved in other contexts. As Cross (2007) points out, most skills acquired and knowledge is developed through informal learning. How we capitalize on that acquired knowledge and recognize learners' skills is something that needs to be addressed, as recent debates in this area suggest<sup>1</sup>.

The development of the internet and web environments is providing increasing access to free and informal learning opportunities and communities. If learning has never been restricted to the classroom, the boundaries now are even wider than before (Lindsay and Davis, 2007). Even within the classroom, learning no longer is bound to a single place.

However there remain a number of outstanding issues: how to capitalize on those 'marginal' learning experiences, and valorise competences and skills acquired through daily life, while assisting learners in reflecting and realizing their full potential. The social web may assist in the development of learning activities which enable the engagement of students with their own learning. However, as pointed out before, the panoply of web applications currently available is not a solution per se. A pedagogical strategy focusing on effective engagement of students and promoting reflection on their learning is fundamental in leveraging the relevance of the technology. The 'distractive' side of the Web can hence be converted into a powerful learning and reflective tool. That is partly what the ICONET- Cartoon Planet project approach, described in this paper, tried to achieve. Though the development of a learning strategy 'camouflaged' by elements of 'excitement', 'fun' and 'play' with the use of interactive learning activities and digital cartoons for micro-reflection about personal skills and competences, we were able to engage learners in a way that activities with the same purpose, but with different strategies, might have not.

## 3 THE ICONET PROJECT

*"There's something wrong when a person is able to do something really very well, but is not considered smart if those things are not connected with school success" (Howard Garden)*

The University of Salford is a partner in the European Commission funded ICONET project which builds on the previous ICOVET project focused on developing and testing validation procedures for vocational skills gained by young people outside the framework of institutional education. The ICONET mission is to build on those experiences and develop new approaches and pedagogical tools for the validation of informally acquired competencies by disadvantaged young people. The main goal is to develop a space within the education system to introduce informal learning methods and pedagogical approaches targeted at engaging the learners with their own learning through active reflection.

The ICONET approach was incorporated into both Year 8 and Year 10 of the Salford Young People's University (SYPU), a Summer School Programme for 11-16 year olds, providing a first-hand experience of life at the University with an opportunity to meet current students and lecturers. SYPU is a community outreach initiative aimed at young people who traditionally would not tend to go to University. The Year 8 SYPU Summer School is sponsored by AimHigher Greater Manchester, 'a Government's initiative to widen participation in higher education in England through activities that raise the aspirations of young people'.

The ICONET intervention was developed in conjunction with the SYPU. The curriculum criteria were based on three broad aspects of teaching and learning:

- an interactive approach;

---

<sup>1</sup> See discussions in the SCOPE community as an example: <http://scope.bccampus.ca/mod/forum/view.php?id=1691>

- a focus on informal learning and skills;
- attractive, diverse strategies for class engagement.

The approach focused on the use of interactive web and game-based reflection to involve learners from the Salford Young People's University with their own learning in a fun, meaningful and personalised way.

The pupils taking part in this programme were between 11 and 16 years old. Classes were usually comprised of pupils from different backgrounds. However, most of them came from disadvantaged social environments and educational backgrounds, and were considered to be at risk of not pursuing further education as it is not part of the culture of their families, thus making them unconsciously discard Further and Higher Education as a possibility to progress their formal education.

### **3.1 ICONET – Cartoon Planet - Approach**

The University of Salford's ICONET approach was based on engaging the young learners from SYPU in interactive situations that would stimulate reflection about their own skills in a familiar environment, and thus help them realize their own potential. Hence, two-hour face to face workshops were planned and offered by the researchers/tutors. The workshops, entitled 'Cartoon Planet', aimed to promote the idea that learning can be exciting. The sessions were organized around activities that were supposed to be fun and stimulate active participation. The aim of the workshops was:

- I. To stimulate guided reflection about the learners' strengths and skills through different peer and group activities.
- II. To utilise Information and Communication Technologies (ICT) to empower students to communicate their skills and competences in an interactive and personally meaningful way.

To fulfil the workshop's main goals, two different sections were planned and developed as part of the workshop. During the first part of the workshop, the pupils were invited to take part in a set of activities which aimed at introducing them progressively to the topic under focus: the recognition of their skills and competences. These activities were not only designed to prepare them for the second phase of the workshop, but also to involve the learners in discussions and guided reflection around the areas 'they were good at'. The role of the tutors was to mentor the learners in their discussions and to help them understand and describe their skills in a more CV orientated language, and most importantly to facilitate reflection and self learning.

The second part of the workshop required the use of computers and took place in a computer laboratory where learners were asked to (re)create themselves online, as avatars (a digital representation of oneself), and describe their skills using voice and text. The avatars were later published and presented to the rest of the class at the end of the workshop.

## **4 THE WORKSHOPS IN PRACTICE**

### **4.1 Preparing the ICONET workshop**

The researchers worked closely with the SYPU team to diagnose the needs and requirements of the participants. They also attended the training session offered by the SYPU coordinating team for the tutors who would be working with the young people during the summer school. This was useful in providing an understanding of the SYPU coordinating team's epistemological approach to teaching and learning with disadvantaged young people and an exploration of innovative strategies to reach out to learners through the use of active learning approaches. Ideas from the training session were incorporated in the ICONET – Cartoon Planet approach.

As a result, the workshop sought to create a learning environment focused on personal and group engagement and support, where there would be scope for personalization, and where the learning activities were designed to be flexible and adaptable for the different groups of students that would join the sessions. Furthermore, the ICONET – Cartoon Planet design was based on the Mind Friendly Learning Framework (Greenhalg, 2001), which is based on a process of stimulating learning through a series of pedagogical steps developed to enhance learning with 'more inclusive and powerful experiences which develop learning to learn skills'. The eight steps of the Mind-friendly learning framework are:

1. To create a friendly and positive learning environment through engaging ice-break activities that will pose exciting challenges to the learner;
2. To connect learner's previous knowledge with new learning experiences;
3. To provide a general perspective on what the learning activity entails;
4. To negotiate the learning process and outcomes to achieve
5. To develop a diverse teaching strategy to enable multi-sensory learning
6. To engage learners actively with their own learning through an exploratory approach
7. To show provide opportunities for learners to share their learning with others
8. To encourage reflection and inquiry throughout the learning process

The workshop was planned and designed to accommodate the eight principles of the framework presented above, offering a variety of learning activities which aimed at creating a lively, engaging learning experience for the SYPU participants.

#### **4.1 Cartoon Planet Sessions during SYPU 2008**

The Cartoon Planet sessions took place in July 2008 as part of the SYPU 2008 programme<sup>2</sup>. An average of 12 students, both male and female, took part in the daily sessions.

The sessions started with a brief introduction about the aims of the workshop and were followed by an "Introduce Yourself" activity. Pupils were asked to share aspects of their experience that they were proud of and that they would like to share with their peers. This helped to create an environment of trust and provided pupils with the confidence to communicate with one another and also with the tutor in a friendly and reassuring environment.

Afterwards, the facilitator of the session introduced the idea that people have skills and competences which might not solely relate to their formal school learning activity, but which are all the same relevant to be included in their CV as part of their skills and competences. This was explained in a language that was familiar to them (no educational jargon was used) and learners were prompted to reflect about "things" they were good at and proud of while using their own words. The facilitator explained this would help them later to 'translate' the knowledge of their skills into a more academic language, which they could include in their future résumé. The workshop activities proceeded with learners being asked to work in pairs and to take part in an interview role play – playing both the interviewer and interviewee - where they had a chance to ask and answer questions that would lead them to reflect about the topic they were exploring. This activity gave learners a sense of achievement and as the learners progressed in their activities, the tutors could notice the learners' own excitement and interest in exploring their own skills and sharing their abilities with their peers. A mix of amazement and enthusiasm is probably what best describes the ICONET – Cartoon Planet workshop. As noted down in the researcher's field notes, 'the learners were delighted to find about themselves through themselves, and also through the eyes of their classmates'. For example, one of the pupils approached the tutor to ask question about one of her peer's skills. She asked if 'being good at doing people's makeup' was a skill. Her classmate had reported about such activity and she thought it could be added to that pupil's skill list. The tutor prompted both pupils to think about what it meant 'to be good at doing people's makeup' and how that could be articulated with one's competences. Together they concluded that those were relevant artistic and social skills. As the researcher wrote down in her notes, a sense of realisation of that pupil's potential had been understood by the pupil herself and that shone through the light of achievement in her eyes. Such small anecdotes as this may seem irrelevant, yet are important in developing confidence and recognition about skills and competences developed outside the traditional school curriculum.

This was followed by a group activity. The entire class was asked to form a round table. The facilitator introduced learners to the formal skills concept, explaining what was meant by the terminology used in the EUROPASS CV regarding skills and competences. Afterwards, the interviewers were asked to present the findings of their interviews. At this stage all students were prompted to help their colleagues verbalise their skills. The entire class participated in this joint reflection, contributing to the collective knowledge of the class.

To introduce the second part of the workshop students were given a card where they were asked to write down a sentence which would summarize their skills including interests, hobbies, sports, and

---

2. <http://www.edu.salford.ac.uk/summerschool/year8>



social activities. This would be their “passport” to the next phase of the workshop which was the key to the “Cartoon Planet”. The game component added some vibrancy to the activity. Learners were still enthusiastic about being in class. Once the cards were completed they were granted access to the Computer Lab and asked to explore the use of cartoons to express what they had learnt about themselves. They were asked to create an Avatar (an interactive, digital cartoon) to symbolize their 'selves' and their learning too. [At this stage it is important to note that secure access to the internet was provided through an application called NETSUPPORT limiting student access to the web application used for the avatars. To enable this special software called NETSUPPORT was used.]

The creation of the speaking cartoons aimed at introducing a fun element to the session. It also aimed at analyzing how these tools can motivate learning and learners' engagement.

The learners were focused and engaged and did not attempt to browse other sites [this had been one of the main concerns of the SYPU tutors, moderators and coordinator, when considering the Internet as a learning tool].

The understanding of the use of online learning tools appeared quite straightforward. The participants were enthusiastic and most were proficient in working with computers. Even those with less experience were fast at mastering it.

However there were no assumptions about learners' digital proficiency and support was provided through brief demonstration of the use of the tool. Nevertheless, participants were quick to understand the concept, although it was the first time they had used that specific application.

Although students were quite fast in reflecting about their strengths, they required help in expressing their competences in the formal or academic language of a CV. They also required support and personal guidance to focus on the tasks and reflected their own skills and abilities. Reflection was an exercise they didn't seem to be used to.

In summary, the ICONET – Cartoon Planet approach supports learners in recognising their own skills and competences and thus realizing their potential outside the formal school setting. By providing tools to support reflection about their own learning, the ICONET approach encourages young learners to tell their own stories in a more confident and exciting way. Furthermore, the reflective component, which can be problematic in a school setting (Reference), seemed to work well. This is probably due to the fact that the concept of 'reflection' was not evoked throughout the workshop. The tutors rather embedded the reflective component in the activities in a way that they were 'disguised' by the environment and the different tasks. It is almost a case that learners were learning without thinking they were doing so. In day to day life learning happens naturally and reflection is integral to that process. It is only when we try to 'make' people learn that it often goes wrong.

## **5 CONCLUSIONS AND RECOMMENDATIONS**

From the verbal feedback we received from the learners themselves, and the mentors and coordinators who spent more time with the learners, the Cartoon Planet sessions seemed to have been popular. The young participants' informal feedback indicates this was a successful approach in terms of applying the ICONET methodology. Feedback included “this is fun” and “now I can use these skills in my CV”. Learners were reported to have enjoyed the way the topic was presented to them and the way they were asked to explore their skills. The micro activities helped motivate the learners' involvement in the workshop. It also allowed learners to learn more about themselves while they engaged in this micro-reflection exercises.

Nevertheless, the workshop was offered only once and the regulations of the SYPU did not permit follow up further contact. Hence it is not possible to identify the longer term effect of the ICONET – Cartoon Planet approach. A longitudinal study would be needed to fully analyse the impact of the ICONET tool in recognising informal learning. However, we believe that this approach can help foster deeper and ongoing reflection about informal skills in an appealing way got learners.

It is our impression that the two different sections of the workshop played a vital role in the success of the session. The personalised mentoring and constant support provided by the tutor to the small group of young people, as well as the freedom they were granted to collaborate with each other while exploring their skills seem to have enhanced motivation and active involvement in the workshop.

The fact that learners were allowed to use computers to create their own avatars appealed to their creativity and reinforced learning from the first part of the session.

In short, we would like to argue that there are a number of key elements that can enable the engagement of young people in this area:

- Face to face contact – as a strong (initial) component of the learner activity (young people need personalised guidance);
- The creation of a friendly, flexible and interactive learning atmosphere by the tutor;
- Tutor's constant and personalised support to facilitate learners' engagement with the activities (small groups of students are advisable);
- The use of ICT to help keep the learners' interest and motivation;
- The development of activities based on social learning approaches;
- The inclusion of a fun component as an integral part of the learning activity.

The approach also raise issues around internet safety. The aim of the workshop was not to focus on digital literacy, but rather to use an interactive web application to enable self and group reflection about informal skills. Hence, net safety was not a focus for the workshop. The workshop provided only restricted access to the internet in line with concerns expressed by the organisers of SYPU. However, if this workshop was to be developed as part of a longitudinal study, with more sessions behind offered over a longer period of time, it would be interesting to develop a parallel strategy on e-safety and digital literacy to build on learners' computing skills and thus empower them deeper understanding and know-how about both the benefits and pitfalls of social computing.

## References

- [1] Anderson, P. (2007). What is Web 2.0? Ideas, technologies, implications for education. *JISC Technology and Standards Watch*. Retrieved from, from <http://www.jisc.ac.uk/media/documents/techwatch/tsw0701b.pdf> Last accessed 29/04/2009
- [2] Ala-Mutka, Punie and Redecker, (2008): ICT for Learning, Innovation and Creativity – Policy Brief, European Commission , Joint Research Centre , Institute for Prospective Technological Studies . Retrieved from <http://74.125.77.132/search?q=cache:7cZ04SNLlucJ:ftp.jrc.es/EURdoc/JRC48707.TN.pdf+Ala-Mutka,+Punie+and+Redecker,+2008&hl=en&ct=clnk&cd=1&gl=uk&client=firefox-a> Last accessed 29/01/2009
- [3] Alexander, R. (2005), Education, Culture and Cognition: intervening for growth International Association for Cognitive Education and Psychology (IACEP), 10th International Conference, University of Durham, UK.
- [4] Attwell G., (2007): Personal Learning Environments - the future of eLearning? 1. Vol 2, N° 1 • January 2007 • ISSN 1887-1542. Retrieved from <http://www.elearningeuropa.info/files/media/media11561.pdf> . Last accessed 26/01/2009
- [5] Barr, R. B., & Tagg. J. (1995). From teaching to learning. *Change*, 27(6), 13-25.
- [6] Bull, G., Thompson, A., Searson, M., Garofalo, J., Park, J., Young, C., & Lee, J (2008). Connecting informal and formal learning: Experiences in the age of participatory media. *Contemporary Issues in Technology and Teacher Education*, 8(2), 100-107
- [7] Burley, D. (1990) 'Informal education - a place in the new school curriculum?' in T. Jeffs and M. Smith (eds.) *Using Informal Education*, Buckingham: Open University Press.
- [8] Brown, J. S., (2002). Growing Up Digital: How the Web Changes Work, Education, and the Ways People Learn. United States Distance Learning Association. Retrieve from [http://www.usdla.org/html/journal/FEB02\\_Issue/article01.html](http://www.usdla.org/html/journal/FEB02_Issue/article01.html) Last accessed 29/03/2009
- [9] Cross, J., (2007), *Informal Learning, Rediscovering the Natural Pathways That Inspire Innovation and Performance*, Pfeiffer, an imprint of WILEY, San Franscisco, CA
- [10] Du Bois-Reymond, M (2004) Youth – learning – Europe, *YOUNG*, Vol. 12, Issue 3, pp. 184-203.



- [11] Green, Facer, Rudd, Dillon and Humphreys, (2005), Personalisation and digital technologies, FutureLab Report, Retrieved from <http://www.futurelab.org.uk/resources/publications-reports-articles/opening-education-reports/Opening-Education-Report201/> Last accessed 19/05/2009
- [12] Greenhalgh, P. (2001) Reaching Out to all Learners. Stafford: Network Educational Press. (A useful aide memoire produced at a very low cost to enable organisations to buy multiple copies. Provides an overview of mind friendly learning.)
- [13] John, P., (2005), Teaching and Learning with ICT: New Technology, New Pedagogy?, *Education, Communication and Information*, Vol. 4, No. 1., 101.
- [14] Learning and Teaching Scotland, (2007), Teaching for Effective Learning – Learning Together, Retrieved from <http://www.ltscotland.org.uk/learningaboutlearning/collaborativelearning/research/learningtogether.asp> Last accessed 29/04/2009
- [15] Lindsay, J., and Davis, V, (2007), Flat Classrooms, Learning & Leading with Technology, *ISTE (International Society for Technology in Education)*
- [16] McLuhan, M., & Leonard, G. B. (1967). The future of education: The class of 1989. *Look*, February 21, 23-24.
- [17] Passey, D., Rogers, C., Machel, J., and McHugh, G., (2004), The Motivational Effect of ICT on Pupils, DfES Publications.
- [18] Pritchard, R., & McDiarmid, F. (2006). Promoting change in teacher practices: Investigating factors which contribute to sustainability. In *Conference Proceedings Dunedin 2006: Teacher Education Forum of Aotearoa New Zealand*.
- [19] PLTS Framework, Retrieved from <http://curriculum.qca.org.uk/key-stages-3-and-4/skills/plts/index.aspx?return=/key-stages-3-and-4/skills/index.aspx> Last accessed 20/05/2009
- [20] Redecker, C., 2009, Review of Learning 2.0 Practices: Study on the Impact of Web 2.0 Innovations on Education and Training in Europe, European Commission, Joint Research Centre, IPTS. Retrieved from <http://ftp.jrc.es/EURdoc/JRC50704.pdf> Last accessed 20/05/2009
- [21] Torosyan, R. (2001). *Motivating students: Evoking transformative learning and growth*. Etc 58 (3), 311-328
- [22] Travers, A. & Decker, E. (1999) 'New Technology and Critical Pedagogy', *Radical Pedagogy* Retrieved from [http://radicalpedagogy.icaap.org/content/vol1.1999/issue2/01travers1\\_2.html](http://radicalpedagogy.icaap.org/content/vol1.1999/issue2/01travers1_2.html) Last accessed 20/05/2009
- [23] UNESCO. (2002). Information and communication technology in education: A curriculum for schools and programme of teacher development. Retrieved from <http://unesdoc.unesco.org/images/0012/001295/129538e.pdf> Last accessed 20/05/2009
- [24] UNESCO, 2004, A Shift in Pedagogy and Integrating ICT in Education, retrieved from <http://www.unescobkk.org/education/ict/online-resources/features/ict-pedagogy/> , Last accessed 20/05/2009
- [25] Wesch, M., 2008, "A Vision of Students Today (& What Teachers Must Do)", retrieved from <http://www.britannica.com/blogs/2008/10/a-vision-of-students-today-what-teachers-must-do/> . Last accessed 20/05/2009
- [26] Williamson, B. and Payto, S., 2009, Curriculum and Teaching Innovation - *Transforming classroom practice and personalisation*, A Futurelab Handbook, retrieved from <http://www.futurelab.org.uk/resources/publications-reports-articles/handbooks/Handbook1246> Last accessed 20/05/2009