



The Net Generation and Teacher Training

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Since the Internet era began, a growing number of innovations have impacted our society, and they are rapidly transforming the way in which people work, study and communicate. Web 2.0, social network and social web are all terms used to indicate a change in the role of 'networks' within society, rather than a technological evolution.

This development has been widely discussed by the scientific community, especially after the publication of Marc Prensky's article: "Digital Natives, Digital Immigrants" (Prensky, 2001), where Prensky suggests that today's students think and process information in a completely different way from previous generations of students; this difference, according to Prensky, is the direct result of being born in the digital age, and having always used the technologies which surround us, like the computer, video games, digital music players, cell phones and so on.

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1 Introduction

This development has been widely discussed by the scientific community, especially after the publication of Marc Prensky's article: "Digital Natives, Digital Immigrants" (Prensky, 2001), where Prensky suggests that today's students think and process information in a completely different way from previous generations of students; this difference, according to Prensky, is the direct result of being born in the digital age, and having always used the technologies which surround us, like the computer, video games, digital music players, cell phones and so on.

'Digital native' (Prensky, 2001), 'Net Generation' (Oblinger, 2003), 'Digital Generation', 'Technological Generation' (Monereo, 2004), 'Millenials' (Howe & Strauss, 2000), 'Generation Y' (McCrinkle, 2006): these are some of the numerous expressions used to describe today's students. Many studies of their learning style have led to a questionable distinction between digital natives and digital immigrants, which tends to simplify the complexity of the phenomenon (Owen, 2004; Krause, 2007; Bayne & Ross, 2007).

It is, however, an established fact that students are, to a greater or lesser extent, used to handling digital tools for communicating, interacting and sharing. And schools and teachers cannot afford to ignore this. (Oblinger, 2003; Kvavik, 2005; Barnes *et al.*, 2007; Thompson, 2007).

To do so would be like continuing to teach using only the spoken word after the invention of writing, or not using books after printing was invented. It would never have happened and, in the medium term, it is taken for granted that the school will be unable to ignore digital communication. The problem is that this revolution in communication has taken place and spread so rapidly. When writing was invented it was never the case that teachers were unable to write while their pupils could already do so, nor, after the introduction of printing were there teachers unaccustomed to books whose students were familiar with them from an early age. Today, instead, students who are used to searching the Internet, communicating with Skype, chatting on Messenger, and sharing contents on YouTube, have teachers who are unfamiliar with these tools.

The object of this article is therefore to investigate aspects of teacher training, and to propose some possible pathways for teachers to follow. These proposals are based on the authors' experiences of European projects in this field.

2 Sloop, Tenegen, Sloop2desc: 3 European teacher training projects

Since 2005 we have been involved in three projects co-financed by the European Community, as part of the Leonardo da Vinci and Lifelong Learning pro-

grammes, which aim to promote the use of new technologies in the school.

The SLOOP project - Sharing Learning Objects in an Open Perspective (2005-2007)

set out to foster a community of teachers interested in producing and sharing open Learning Objects (Ravotto & Fulantelli, 2007). The project was profoundly influenced by the philosophy of the Open/Free software movements and introduced the idea that didactic contents, like software packages, can be produced by a community of users who share interests and objectives; in this specific case the community in fact consists of teachers. The concept of ‘network’ is therefore an essential aspect of the project and the teachers are encouraged to use online environments to communicate in a similar way to their students. Moreover, the model of sharing resources through the Net and the logical and technical processes involved in setting it up, reflect those models and processes typical of the Net Generation (think of environments for sharing film footage like YouTube, which are so popular with young Internet users.

While Sloop does not specifically refer to issues related to the digital divide between immigrants (the teachers) and natives (the students), it is clear that the project aims to reduce this gap by involving the teachers.

This objective is instead set out explicitly in the Tenegen project - Connect the Teachers to reach and teach the Net Generation (2008-2010): the aim is to get teachers onto the Internet to reach the students of the Net Generation and teach them.

The Tenegen project manifesto, promoted by the Hungarian organization Prompt, maintains that teaching methods must change continually; they must adapt to the needs of the information society and meet its expectations. Whether we like it or not, a revolution of this kind is already under way. A new generation of students is living in our midst. This is the Net Generation, born after 1980, which learns and communicates in a different way from previous generations. Daily life without a computer is inconceivable for these students and they are used to searching for and finding information quickly on the Internet. They are the “digital natives”, who are always connected.

Attempts have been made to meet the expectations of these young people by producing online courses, including multimedia learning objects, animations and all kinds of digital contents which could stimulate their interest and curiosity, but without much success. A lot of research into e-learning and ICT in the school has shown that the Net Generation requests and appreciates good teachers, just like previous generations. They do not like learning by themselves and depend on teachers to acquire the knowledge they need.

However, teachers do not benefit at all from online opportunities: they tend to stay in their own face to face classrooms, giving traditional lessons and using traditional teaching methods.

This is why the “connect the teacher” project proposes to get teachers online. Because being connected is more important than preparing material for online learning which leaves the students to study on their own. Teachers must learn to be present in the online environment at the disposal of students; they must meet up with their students on the Net (Tenegen, 2008).

Finally, the Sloop2desc - Sharing Learning Objects in an Open Perspective to develop European skills and competences (2009-2011) combines the SLOOP model with the theme of competences. Through the experience gained from the Tenegen project, the objective of introducing teachers into the digital world ‘frequented’ by their students is much more explicit than it was in the original Sloop project.

Both Tenegen and Sloop2desc are TOI projects (Transfer Of Innovation): projects which transfer innovation from previous projects: SLOOP and Netis, in the case of Tenegen.

3 Sharing Open Educational Resources

An element which all three projects have in common is the sharing of digital educational resources produced by a community of teachers. This approach is based on the considerable literature which has highlighted the importance of models of production and sharing of open educational resources (Open Educational Resource -OER) in educational contexts (Atkins *et al.*, 2007; OECD, 2007; OLCOS, 2007).

The literature tends to emphasize the pedagogical, organizational and political advantages of the Open Educational Resources, where a teacher can access free contents created by other teachers in real educational contexts. If it is also possible to modify these resources, as in the case of the environment of the Sloop project using the OpenLO model, then the teachers are able to access educational resources which can be contextualized, thus allowing them to be reused in pedagogical terms.

Within the environment of the Sloop, Tenegen and Sloop2desc projects, and in particular considering the need for teachers to enter the digital world ‘frequented’ by their pupils, an approach which envisages the collaborative production and sharing of digital contents acquires even greater significance: the teachers are encouraged to experiment, often unconsciously, with a series of behaviours that are typical of the Net Generation (Fulantelli *et al.*, 2009).

In fact, content sharing on the Internet is typical of young students: just

consider what happens on YouTube. And just as users can tag or comment on videos uploaded by users to YouTube, or send similar film footage, in the same way teachers are encouraged to make comments and to enrich the materials produced by other Net users, possibly by referring to other educational contents. Besides, by sharing educational resources, the social bonds which exist among teachers belonging to an online community are strengthened, promoting dynamics similar to those of environments for sharing digital resources used frequently by students.

Thus by sharing digital resources and using mechanisms which support sharing processes, teachers' online behaviour resembles that of their students.

4 Three models of online teacher training

Training courses for teachers are a key element of SLOOP (2005-2007), Tenegen (2008-2010) and Sloop2desc (2009-2011). They are courses which share important features:

- they aim to stimulate teachers to integrate face to face teaching with online education by enabling them to experience online training themselves,
- they provide an online training model which involves intensive interaction and not just self learning based on didactic materials,
- they use the Moodle platform to set up the learning environment,
- they emphasize the production and sharing of OERs, Open Educational Resources, or open LOs in SLOOP terminology.

But besides these common elements, there are also some notable differences which are of particular interest, considering that the issue of training teachers to integrate e-learning and web 2.0 with face to face training is, and is going to remain, highly relevant.

4.1 SLOOP courses

The courses are available in different versions and in 5 languages and have involved 209 teachers at a European level (86 in the Italian course, 60 in the English one, 28 in the Spanish one, 20 in Slovenian and 15 in Romanian).

The course lasts 9 weeks and is structured as follows:

- Week 1: LO and pedagogical aspects,
- Week 2: SCORM and metadata,
- Week 3: production of an LO,
- Weeks 4 and 5: making an LO SCORM compliant,
- Weeks 6 and 7: introducing the SCORM compliant LO into Moodle,

- Week 8: the sharing philosophy,
- Week 9: freeLOms.

It was taken for granted that course members were interested in integrating face to face training with online training. The aim of the course was to stimulate them to produce and share open LOs, both from a technical point of view and from the point of view of licensing their use (Fulantelli *et al.*, 2007).

4.2 Tenegen courses

The Tenegen courses aim primarily to accustom teachers to being connected to the Internet: they should be connected to the Net and be able to move in various Web 2.0 environments as well as creating their own networks where they can exchange opinions and didactic resources.

The Tenegen courses consist of independent modules which can be used individually:

- Module 1: E-learning concepts (5 weeks),
- Module 2: Networked learning (3 weeks),
- Module 3: Educational ICT tools (4 weeks),
- Module 4: E-learning event in Moodle (1 week),
- Module 5: Sharing Learning Objects (5 weeks).

The Hungarian edition of the course involved 200 teachers – 70% were teacher trainers, 20% from secondary schools and 10% from primary schools. A pilot course in English has also been launched involving 60 participants from various countries and there is another course for 30 Turkish teachers.

4.3 Sloop2desc course

The Sloop2desc courses aim to:

- provide teachers with the necessary competences for online training, for using the Web 2.0 for educational purposes and for designing and sharing OERs.
- help teachers to move on from programme focused teaching involving lists of contents, to competence based training.
- enable participants to produce OERs for their students based on competence accreditation systems. In Italy and Slovenia the field of interest which has been selected is that of ICT competences with EUCIP as the reference framework. While Romania has adopted the field of maritime navigation using the competence accreditation system indicated by the International Maritime Organization (IMO).

The structure of the course is as follows:

- Module 1: Using Moodle both as course members and as teachers (2 weeks),
- Module 2: Being an online tutor and using the Web 2.0 tools (3 weeks),
- Module 3: Using and producing open digital educational resources for online training (3 weeks),
- Module 4: the European Qualification Framework (EQF), the e-Competence Framework (e-CF) and EUCIP standards (2 weeks),
- Module 5: Collaborative production of open educational resources based on the EUCIP/IMO standards (6 weeks)

From February to June 2010, two pilot courses were held to train about 60 Italian teachers. Between November 2010 and April 2011 courses were held for around 40 Slovenian teachers and a similar number of Romanian teachers as well as various cascade courses for 500 Italian teachers.

5 Target groups and methods

One of the most significant differences between the courses regards the target groups.

The Sloop and Sloop2desc courses target teachers who are accustomed to using the Internet even if they generally use it only for personal interests and not for activities with their students. In fact, for the most part, these teachers were recruited online.

Instead, the Tenegen courses target “standard” teachers who, by and large, are not accustomed to using the Internet. Moreover, the Tenegen courses, at least in the case of the Hungarian teachers and for some of the modules, provide credits which can be used to further their careers.

The differences in the target groups obviously influence the methodologies used.

5.1 La methodology of the SLOOP Sloop2desc courses

The SLOOP and Sloop2desc courses both emphasize:

- work proposals which the individual participants can develop as they wish according to their own interests;
- a learning pathway based on learning by doing where the proposed materials are only a starting point from which to develop a wider ranging activity and to make comparisons within the group;
- interaction not only with the teacher/tutor, but also with peers within the

group as a collaborative learning experience.

An evolution took place in the passage from SLOOP to Sloop2desc courses, partly due to an event which occurred in the brief interval of time between the beginning of the first project and the start of the second, this being the explosion of Web 2.0.

The main differences between the courses concern the resources, the methodology and the environment for interacting:

- With regard to the resources proposed to course members, in SLOOP they were essentially SCORM Learning Objects composed of numerous SCOs, specially designed and developed. Instead Sloop2desc favoured an ecological choice of reusing existing resources (Ravotto *et al.*, 2009): in addition to products developed in SLOOP, videos and film footage taken from Vimeo, YouTube and Slide Share were used.
- Regarding the methodology, in the SLOOP course there were always teachers/tutors present to make suggestions and moderate. While in two of the Sloop2desc modules – including the fifth where educational materials and courses for students were produced – the collaborative dimension was strongly promoted: the course members were invited to organize themselves autonomously without the intervention of a tutor in order to define work modalities, the types of products, timing and so on.
- Finally, while in SLOOP all the work took place within the Moodle environment, in Sloop2desc, especially in the collaborative phase, the course members were encouraged to look elsewhere, using Skype to communicate, GoogleDoc to develop resources collaboratively, MindMap for designing and so on.

5.2 The methodology of Tenegen courses

As we have already explained, the Tenegen courses are targeted at the typical teacher, not one who is already “connected”. Getting these teachers onto the Internet is an ambitious objective.

Since the target group was traditional in the Tenegen courses:

- the work indications are generally more detailed and precise and the work carried out is more closely overseen;
 - most of the interaction takes place between course members and teachers rather than within the group;
 - the educational material is more traditional indesign. The “book” resource on Moodle was chosen because it is possible to produce a pdf file which can be printed and then studied in offline mode.

Only one of the five Tenegen course modules does not include the above features, the one on Network learning which, in line with the NETIS project, proposes work modalities that are more typical of connectivism (Bessenyei & Tóth 2007). It is the module which has been least successful, both because it does not provide credits and because it is probably too “open” in the context, more suited to the Sloop target group and not to traditional teachers.

In any case, as it has generally satisfied the characteristics of the target group, the Tenegen course has accustomed teachers to being connected and staying connected to the Internet; among other things, all the course members were required to start a blog where they commented on the various course topics.

Conclusion

10 years have passed since Prensky first highlighted how the thinking patterns of digital natives changed because of the experiences they had from an early age, and led to a different structuring of their brains (Prensky, 2001).

The dichotomy between digital natives and digital immigrants which resulted from Prensky’s ideas, has been hotly debated at a scientific level over the past few years, although it is accepted that significant differences exist in the way students learn today with respect to the past. While it may still not have been demonstrated that digital natives have specific thinking patterns, important studies like those of Howard Gardner state that intelligences significantly differ from one another depending on the kind of culture they have developed in: if in a pre-literacy culture, or in a classical or modern one where the text is essential, or in a post-modern culture where literacy refers to a variety of signs that work jointly, sometimes in a synergic way, some other times in a chaotic mixture (Gardner, 2003).

Faced with these changes, even if “the attribution of characteristics on the basis of generational ‘virtues’” was a “shortcut with respect to profound educational difficulties” (Rapetti & Cantoni, 2010), “the school cannot avoid the fact that the media and ICT are the culture in which our students are used to living, building and exchanging meanings” (Ardizzone & Rivoltella, 2008). The school cannot therefore proceed according to traditional channels and methods.

Teachers must learn to discuss, communicate and exchange meanings with their students in the environment in which they live, in digital technology. It is therefore essential for teachers, too, to get used to living in this environment, to being connected, to creating a network, to building and exchanging opinions, work hypotheses, educational materials and experiences.

The three projects presented, while differing in their specific objectives and methodological approaches, all aim to innovate education in the direction indicated above.

Zsolt Tóth's analysis of the results of the Tenegen project using Social Network Analysis methods and focusing on qualitative and quantitative aspects of the collaborative knowledge building process, shows how the learning process was highly collaborative; online communication between teachers/course members, in particular on the forums of the Moodle platform used in the project, was central to the learning process. Participants' comments confirm the success of the project, as the majority of them evaluated it as "active, memorable and useful for learning processes (Tóth, 2011).

Although the results of the quantitative evaluation regarding the courses in the Sloop2desc project are not yet available, the success of the project is demonstrated by the extremely positive comments of some of the teachers attending the courses, by the intensity of the online communication activities which developed during the months of the course, and especially by the fact that, even before the course ended, some of the teachers set up online environments for elearning to use with their pupils, thus transferring the Sloop model and applying it to other contexts, and going beyond the experimental phase which typifies European projects.

Despite these results, the changes imposed by new technologies still appear to be progressing at too slow a pace within the school, even though Italian teachers show a readiness to embrace these changes: the course set up as part of the Sloop2desc project attracted 1,700 applicants for only 400 places. The commitment of the teachers deserves greater support from scholastic institutions which so far seem to have made little effort to bring about real renovation through technologies, renovation which is essential if we want to see a return of students who, generation after generation, distance themselves ever further from the educational models and languages used in the school.

REFERENCES

- Ardizzone P., Rivoltella P. C. (2008), *Media e tecnologie per la didattica*, Vita e pensiero.
- Atkins D. E., Brown J. S. & Hammond A. L. (2007), *A Review of the Open Educational Resources (OER) Movement: Achievements, Challenges, and New Opportunities*. <http://www.oerders.org/wp-content/uploads/2007/03/a-review-of-the-open-educationalresources-o> (Data di accesso: 2 giugno 2010)
- Barnes K., Marateo R., Pixy Ferris S. (2007), *Teaching and learning with the net*

- generation*, Innovate: Journal of Online Education, vol 3, issue 4, April/May 2007. http://www.innovateonline.info/pdf/vol3_issue4/Teaching_and_Learning_with_the_Net_Generation.pdf. (Data di accesso: 10 marzo 2010)
- Bayne S., Ross J. (2007), *The 'digital native' and 'digital immigrant': a dangerous opposition*. Proc. Of Annual Conference of the Society for Research into Higher Education (SRHE) December 2007 http://www.malts.ed.ac.uk/staff/sian/natives_final.pdf (Data di accesso: 28 gennaio 2011)
- Bessenyei I., Tóth Z. (2007), *E-learning experiences in the NETIS project*, NETIS 2007, http://www.ittk.hu/netis/doc/textbook/bessenyei_toth_elearning_eng.pdf (Data di accesso: 27 giugno 2010)
- Authors (2009), *Open learning resources as an opportunity for the teachers of the Net Generation*, in Proceedings of the ICVL 2009 - the 4rd International Conference on Virtual Learning, October 30-November 1, 2009 Jassy (Romania)
- Authors (2007) *The Open Learning Object model for the effective reuse of digital educational resources* in Proceedings of the Openlearn 2007: Researching open content in education, Milton Keynes, UK.
- Gardner H. (2003), *Cambiare idee. L'arte e la scienza della persuasione*, Universale Economica Feltrinelli, 2003
- Howe N, Strauss W. (2000), *Millennials Rising: The Next Great Generation*. New York: Vintage Books.
- JISC (2007), *Student expectations study*, July 2007. <http://www.jisc.ac.uk/media/documents/publications/studentexpectations.pdf>. (Data di accesso: 11 novembre 2010)
- Krause K. (2007), *Who is the e-generation and how are they faring in higher education?* in Joe Lockard and Mark Pegrum (eds) *Brave New Classrooms: democratic education and the internet*. New York: Peter Lang. pp.125-139.
- Kvavik R.B. (2005), *Convenience, Communications, and Control: How Students Use Technology*. In Oblinger D.G. and Oblinger J.L. (Eds.) *Educating the net generation*. <http://net.educause.edu/ir/library/pdf/pub7101g.pdf>. (Data di accesso: 23 gennaio 2011)
- McCrinkle M. (2006), *New Generations at Work: Attracting, Recruiting, Retraining & Training Generation Y*: McCrinkle Research
- Monereo C. (2004), *The virtual construction of the mind: the role of educational psychology*. Interactive Educational Multimedia, vol. 9.
- Oblinger D. (2003), *Boomers, gen-Xers and millennials: understanding the new students*. Educause Review, July/August 2003. <http://www.educause.edu/ir/library/pdf/erm0342.pdf>. (Data di accesso: 23 gennaio 2011)
- OECD - Organisation for Economic Co-operation and Development, Centre for Educational Research and Innovation (2007), *Giving Knowledge for Free: The Emergence of Open Educational Resources*, SourceOECD Education & Skills, Vol. 2007, No. 3, May 2007
- OLCOS (2007), *Open Educational Practices and Resources: OLCOS Roadmap 2012*. OERderves. http://www.olcos.org/cms/upload/docs/olcos_roadmap.pdf (Data di

- accesso: 18 giugno 2010)
- Owen, M. (2004), *The myth of the digital native*. Futurelab, June 2004. <http://archive.futurelab.org.uk/resources/publications-reports-articles/web-articles/Web-Article561> (Data di accesso: 23 gennaio 2011)
- Prensky M. (2001), *Digital natives, digital immigrants*, 2001, <http://www.marcprensky.com/writing/Prensky%20-%20Digital%20Natives,%20Digital%20Immigrants%20-%20Part1.pdf> (Data di accesso: 27 giugno 2010)
- Rapetti E., Cantoni L. (2010), *Nativi digitali e apprendimento con le ICT. La ricerca GenY @ work in Ticino*, Svizzera, in Je-LKS n° 1, 2010, pag. 52
- Authors (2007), *L'idea base di SLOOP: condividere free/open LO. in Condividere free/open LO. I risultati del progetto SLOOP* (o <http://www.scribd.com/doc/3872140/Lidea-base-di-SLOOP-condividere-freeopen-LO-2007>, Data di accesso: 27 giugno 2010)
- Authors (2009). *Principi ecologici per l'e-learning* in Atti del Congresso AICA 2009 (o <http://www.scribd.com/doc/22245222/Principi-ecologici-per-l-eLearning-2009>)
- Tenegen, Impressum, <http://www.tenegen.eu/it/node/385> (Data di accesso: 27 giugno 2010)
- Tóth Z. (2011), *Collaborative and cooperative knowledge co-construction in the TeNeGEN project*, http://www.tenegen.eu/en/webfm_send/320, data di accesso: 30 marzo 2011
- Thompson J. (2007), *Is education 1.0 ready for web 2.0 students?* Innovate: Journal of Online Education, vol 3, issue 4, April/May 2007.

SITES

SLOOP: www.sloopproject.eu

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