

EPISODES OF SITUATED LEARNING. A NEW WAY TO TEACHING AND LEARNING

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ABSTRACT

The article aims to present EAS methodology. EAS in Italian means: "Episodi di Apprendimento Situato" (Episodes of Situated Learning) and refers to a teaching strategy based on active learning. Starting from the actual learning context, EAS methodology is introduced in this article paying attention to its conceptual background and operative structure. The conclusion is about the ongoing experimentations of this methodology, in schools and at the University.

KEYWORDS: Mobile learning, Situated learning, Education technology, Teachers training.

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1. Complexity and learning challenges

Many teachers we meet in our teacher training activities, usually say that their students are no more able to do some things that traditionally, in the past, students were able to do. For instance, they have problems with speaking and writing, they seem not so smart when they are asked to conceptualize or critically think, their argumentation is not so strict and logically made. Apart this, they seem unable to pay attention to what teacher says, their cultural motivation seems low, their attitude to study and research is rarely good. What teachers feel is a real gap between them and their students. A cultural gap, because School Culture is nowadays really far from youngsters' cultures. May be also a generational gap, if we accept the idea that digital natives are used to behaviors that the adults, supposed to be digital immigrants, are not yet used to. The hypothesis of some scholars is that we could be in presence of a new digital generation able to do a lot of new things (multitasking, transmedia storytelling, etc.) and unfortunately unable to develop traditional skills. According this way of thinking, digital media should be able to set our mindframe (de Kerkhove, 1991): as oral and literate cultures was born from the diffusion of word and writing, so digital media could impact on our way of thinking producing different attitudes in our students. The result will be a new literacy, but also the lose of the old one.

I don't think so. I think that today's youngsters are smart and can develop both the traditional and new skills, as Wolf (2008) suggests talking about what she names "bilingual brain". The problem is that they seem don't do this: they really have difficulties in facing world's and knowledge's complexity.

Otherwise this complexity is quickly increasing. If we put mind to information and knowledge development, it's easy to recognize how it is difficult to find and manage them. Our feeling is the one Pierre Levy (1997) indicated in the early '90s when he wrote that we are living the Second Deluge: the Information Deluge. Our problem is the same of Noe's one: what do we have to get on the ship? Leaving the metaphore: here we have a problem about information retrieval, its critical evaluation, its smart utilisation. It's sure that a today student has to manage much more information than we had to do when we were young. This is not a case of pluralism: information overload makes difficult for us to have an opinion; it doesn't mean more chances but only more chaos. How the school could foster students' skills about this? How make possible for them moving through information being aware of this? And once we had answered these questions, the challenge should be to choose the information we need, better if it is correct. Digital information and the development of web communication changed the way into which we build and share knowledge. The idea of authorship itself is changed: today there is no editorial system able to evaluate that; may be that an unknown person could be more expert on some issues than a scholar. To understand this, our students need more critical thinking than in the recent past.

So it seems that we have a strange situation. We have a world and a culture every day more and more challenging, and students less and less able to deal with them. More challenging situations should require more skills; teachers' experience is that in the case of today's students their skills are less than in the past. What is it possible to do? My opinion is that teacher traditional vocation – that is mainly learning mediation – has to be rethought. We have to find new

teaching styles and actions for making able our students to better understand. Our aim in the next pages is to present a methodology with which to make this. We're going to do this in three steps: (1) highlight some educational ideas good for the context we described above; (2) present a conceptual framework of "EAS model" as an example of operative utilisation for these ideas; (3) talk about some already done experimentations and some research future trends.

2. Rethinking Education

Today is not possible to think to any innovation in education without considering neuroscience contribution. Research in this field showed that are almost three the ways into which humans learn, that are: repetition, experience and modeling.

The role of repetition has relations with neuroresearch on memory. As Kandel's studies pointed out (Kandel, 2007), our brain's work is quite different in the case of short term memory and long term one. Short term memory is the result of the job of modulator neurons: this is in relation with the serotonin produced by the effect of synaptic potential on them. On the contrary, long term memory needs the synthesis of new proteins: more precisely it needs the traslocation of PKA nucleous and the fosforillation of some other proteins such as CREB-1 and CREB-2. Brain change, in the case of short term memory, is functional; in the long term one, is anatomical. What explains the shift between them is the repetition of the stymulus. This is true both in the case of cognitive assignments and in the case of experience learning involving body. So it seems that without trying and trying, learning is impossible; at the same time it is difficult to think to any learning process into which should be not involved the effort of memorization and consolidation of what is learnt.

Experience affects learning through emotions. As Damasio (1994) says, emotion is a change in our body produced by a certain situation. When we are alone in a desert road, by night, hearing strange noises around of us, we feel that our heart is running quicker than usual. This change – heart's acceleration – is what we name emotion. When we become aware of what is happening, we are able to name this emotion labelling it with the word "fear". According to Damasio this switch from body change to the consciousness of this, is the switch from emotion to feeling. Our brain learns from experience, storing neural maps made with a stymuls, the corresponding emotion and what he names somatic marker. This is a change we perceive in our body when something is going to affect us. So, when a situation we lived in the past is coming back, its somatic marker alerts us. The effect of this is, for us, the chance to preview what is happening without making experience of it (Frith, 2007; Friston, 2010, 2012). The somatic marker theory is a good explication of how our brain learns from experience: searching for situations dealing with positive emotions and escaping from those dealing with negative ones.

We finally learn also from the others. This is true for all those cases into which we observe people making some things: mentoring is usually based on this kind of practice; arts and jobs training, since the more ancient ages, are done in this way; Giotto learnt from Cimabue living at his school, John Ford from Griffith on

the set while he was directing his troupe. Giacomo Rizzolatti (Galleese et alii, 1996) and his collaborators at the University of Parma explain the reason why of this way of learning. Working on monkeys, they discovered a special kind of bimodal neurons activated both when the monkey did something and when it was looking at another monkey doing the same thing. These neurons in humans are situated in the parietal cortex, near the Broca area: Rizzolatti named them “mirror neurons”. Some years later, Vittorio Gallese (2005), one of Rizzolatti’s collaborators, discovered a third case into which mirror neurons light up: this is when we imagine to do something (theory of embodied simulation).

If we consider these three ways of learning, we can understand that they are motivated by the same aim: help our brain to face the complexity of the world. As Zeki (1999) wrote, our brain works like poetry: according to the famous Tennessee Williams definition, it searches for eternity in ephemeral things.

Knowing this, the problem for teachers is how to scaffold brain in its activity. Each one of the brain’s learning ways we talked about, could be fostered through specific didactical actions. Microlearning (Pachler et alii, 2010) is what it’s possible to do for facilitating repetition. Usually we learn better if contents we’ve to learn have a small granularity: this helps people in focusing their attention, makes sure them of what they are working to. Microlearning means to learn through microactivities, built on microcontents. It is a learning strategy developed in the field of Mobile Learning. Contents are learning objects readable via mobile devices; the same devices are the multimedia tools with which students can do their activities. Both reading and contents production are possible outside the classroom: mobile devices allow connection and contents portability. So really people can learn wherever they want.

Experience learning is traditionally related to active learning. This means to make possible that students could be actors of their own learning. As Activism demonstrated, there is no chance for learning if teacher speaks all the time, thinking that education is only information giving. Learning is fostered if it is experienced, that is related with emotions and real life situations. Classroom has to be re-designed as a lab: lessons become workshops into which problem-solving and collaborative learning are the main students’ activities. Digital technologies and mobile devices can empower these activities making possible that every student could be able to produce its contents and share them with his/her colleagues.

Learning one from each other needs to be situated. Situation is a landscape into which learning actions make sense. Gee argues this when he talks about what he names “situated meaning principle”. Each meaning doesn’t make sense if it is not situated: “The meanings of signs (words, actions, objects, artifacts, symbols, texts, etc.) are situated in embodied experience. Meanings are not general or decontextualized. Whatever generally meanings come to have is discovered bottom up via embodied experiments” (Gee, 2003, 224). This is what every teacher knows: if you want make easier learning for students, you have to contextualize it. More the meanings are disembodied, less they are learnable. Embodiment of knowledge and learning is possible only if we understand that we have to build meaningful contexts and acting into them with our body: words, occupation of the space, movements, gestures, etc.

3. EAS model: a conceptual framework

In the last years, was developed a methodology thanks to which try to accept the challenges we talked about in the first paragraph and rethink education according the indications of the last one. The name of this methodology is “EAS”. The Italian meaning of the acronym is “Episodi di Apprendimento Situato”, that is “Episodes of Situated Learning”. The book about this methodology (Rivoltella, 2013) has become a handbook for a lot of teachers, generating in Italian school a real “EAS Wave”. About this we’re going to discuss in this article’s conclusions.

Conceptual landscape

First of all let’s consider the conceptual landscape of EAS. Here we have two main ideas we’re going to better explain with their references in teaching theories:

- 1) teaching is a design activity;
- 2) if you want make your students’ learning more effective, flip your classroom.

To think about teaching as a design activity, means to consider that what teachers and their students do in the classroom is a cultural work. It is a not easy thing to think.

Usually we don’t think to teaching in a cultural way: traditional education hasn’t a great consideration for school productions; everybody thinks that teachers don’t really make culture, but that they only provide a mediation for cultural transmission; and students activities are not so valued. And it’s very curious that even teachers use the word “scholastic” in a negative way when they refer to a not so smart performance of their students.

The idea of teaching as design is totally different. It suggests that what teacher and students are doing in the classroom is quite similar to what Pierre Francastel (1951) names “montage des objets culturels”. Francastel studies theatre in the Modern Age. Particularly, he studies the organization of public performances in the Renaissance. Thinking to this, he argues that this kind of activity needs a three-step process: “decoupage”, that is to bring a cultural object and to separate it from its natural context (1); “montage”, that is build up a new cultural object bringing together all what we’ve previously cutted off from the original contexts (2); “performance”, that is to put this new cultural product in the mainstream of Culture (3).

The New London Group (NLG) thinks to teacher’s work in a quite similar way (Cope & Kalantzis, 2000): first of all teacher and his/her students study cultural objects in their natural contexts (designed); secondly, they bring those objects in the classroom and build something new starting from them (designing); finally, they re-place these new objects in the original context redefining it and so contributing to culture making (redesigned).

This implies that teaching has to be re-thought in its meaning. The most important thing is not to provide information to the classroom, but to plan, to imagine didactical architectures, to build up learning processes taking care of methodologies and tools: teaching is a design science (Laurillard, 2012).

The second idea we were talking about is Flipped Learning. As we know, with

this name we usually refer to a teaching technique whose aim is to flip the traditional organization of the classroom. In traditional education, teaching is in the classroom, learning is at home. In the classroom students take part to teacher's lecture, take notes, try to understand; at home, doing their homeworks, they have to learn, that is doing exercise and going in depth with meanings. In this case, it's clear that probably students could have the main problems with learning when they are at home: this means that when they more need the teacher, the teacher is not in. So, if we flip this situation, making possible that pupils find information at home, they could have the chance to learn together in the classroom: teacher is in for trouble shooting and problem solving.

What people think is that the origin of flipped lesson is in the Seventies of the past century; in that context, flipping was a way for encourage teachers in the university to use Learning Management Systems. So it seems that flipped lesson was born with e-Learning, is a fact of innovation. But if we put mind to the history of education, we could be able to know that the idea of flipping is more ancient. It belongs to the Activism tradition, particularly to Celestine Freinet. This marvellous primary teacher was used to say that he never did a lecture: according Freinet, if before teacher speaks, and then pupils act, they could lose a lot of what they could learn from their ownes discoveries if they were allowed to be experienced. So, Freinet's lectures were always "a posteriori": that is flipped. But flipping is even more ancient: for instance, in the Rabbinic Tradition, classroom is always flipped.

Methodological Framework

EAS methodology has to be considered both as a case of teaching as design and as a flipped lesson. To look at Fig. 1 could help to understand why EAS have to be considered an example of flipped lesson

Steps	Teacher's actions	Student's actions	Learning strategy
Preparation	Gives homeworks Makes a conceptual framework Shares it with the students Gives inputs Gives an assignment	Does homeworks Hears, reads and understands	Problem solving
Activity	Sets activities' times Manages students' work	Builds and shares products	Learning by doing
Debriefing	Assesses Discusses misconceptions Defines concepts	Analyses schoolmates products Discusse with them Reflects on products and processes	Reflective Learning

Fig. 1 – EAS methodological framework

Step 1 - The first step, before the lesson, is to prepare the activity that with our EAS we're going to imagine the students could do. Teacher has to choose which kind of homework is going to give to the classroom: its aim is to make possible that students could manage information about what they're going to learn through the activity planned by the teacher for Step 2. After this, teacher prepares the conceptual framework he's going to present to the classroom. Stu-

dents, at home, do their homework and so they start to think about what will be the object of their activity in the classroom.

Step 2 – Teacher starts the lesson presenting, in a few minutes, the conceptual framework to the students: a principle, an idea, some highlights he/she considers could be useful for students better learn. After this he gives an input (a video, a problem, a text, etc.) to the classroom and, starting from this, asks students to make a challenging activity. Students are usually asked to build up a product: a movie, a storytelling, a text, a problem solution, etc. The teacher manages the activities and provides students with scaffolding.

Step 3 - After students have finished their activity, teacher asks to some of them to present his/her work to the classroom. Everyone can make observations and each of them is discussing with each of the other ones about results and possible solutions. While students discuss all together, teacher is observing them, assessing their performances and products. Finally he/she makes his/her lesson: individualizing misconceptions and defining the concepts that thanks to the EAS was possible to meet.

So it's clear that EAS is flipped: students are asked to do some activities **before** the lesson; these activities are useful for developing an activity in the classroom; **after** the activity is over and students discussed about it, teacher does his/her lecture. A few minutes as enclosure of the EAS.

If we consider Fig. 2, it's possible to understand why EAS methodology is a good example of what we named teaching as design. In the table is possible to match the steps of NLG Framework, learning actions students are requested to do, and the planning steps a teacher has to respect while is preparing to work with EAS in the classroom.

NLG Framework	Learning actions	Planning steps
Designed	Experiencing	1. To prepare homeworks 2. To prepare the conceptual framework 3. To choose the input for promoting activity
	Conceptualizing	4. To prepare homework support materials 5. To prepare conceptual framework presentation
	Analysis	6. To give indications into support materials
Designing	Analysis	7. To prepare the assignment for the classroom
	Application	
Redesigned	Discussion	8. To prepare the storyboard for debriefing activity
	Publication	9. To imagine output and storyboard

Fig. 2 – EAS and NLG Framework: learning and planning actions

As it is possible to see, planning is really important when you use EAS in your teaching activity, and planning in Education is moreover a design activity. Two more quick indications. The first one is about the relationship between planning and reflective teaching. To think teaching as a design activity means to make that every didactical choice or action in the classroom is explicit: this makes teacher

more aware of he/she is doing or going to do. And as Schön (1984) well showed, a reflective practitioner has to be aware of his/her actions.

The second indication is about the chance that technology provides to teachers for fostering their planning activity. At CREMIT we developed a comparative research among 16 online tools with which doing this. Most of these tools are aggregators (like *Blendspace*, or *Frog*): thanks to them teachers can plan their activities, make them in the classroom, provide a documentation of what they and their pupils did in the classroom itself.

4. Experimentations and future trends

In this last paragraph my aim is to briefly present some of the actions that CREMIT (the Research Centre on Education, Media, Information and Technology of the Catholic University of Milan) did in order to test and promote EAS methodology. They worked (and are working) in two main directions.

The first one is about teachers' training and school innovation.

CREMIT, usually works with teachers. Doing this in the last years they had the chance to meet some very smart teachers, able to manage the classroom using active techniques and new technologies. Since 2012 they invited these teachers (they are about 40) to take part to a practice community. Using Google applications (Groups and Drive) for working together and we planned almost two in presence meetings per year.

The first result of the community activity was the organization of a "EAS Day", in Milan, Catholic University, October 17, 2014. The aim of the meeting was that teachers could know EAS methodology, learning one each other, particularly from the experiences of the community members. They had more than 200 participants from the Middle and Northern Part of Italy; they took part to the main session in the morning, and to the workshops in the afternoon. Was also introduced a "EAS Award" that is going to be celebrated every year in the future.

Meanwhile, CREMIT tried to test the usefulness of EAS methodology in vocational education. In this case we've a teaching and learning situation quite different from school one: learning has to be more active; the relationship between teaching and job has to be stronger; students' motivation has to be fostered with challenging and involving activities; usually disciplines are technique, require to be held in the form of workshops. CREMIT hypothesis was that working with EAS could be useful. So they started a collaboration with Istituto Zanardelli, a Special Agency of Brescia Province (North-Eastern part of Lombardia, about 100 Km. from Milan) that is owner of 9 vocational training centres in all the Province. The aim was to train teachers about EAS helping them to use technology in the classroom through this methodology. CREMIT finished the first year of experimentation with great results and they've already planned this new year activity.

The second direction of other experimentation activity is the internationalization of EAS. This is the case of a research project shared with the Universidade Federal de Santa Catarina (UFSC) in Florianopolis, south part of Brazil. The project is about teachers' training, aiming to provide Brazilian teachers with an opportunity for innovating their practices, and at the same time trying to understand what happens when we transfer methodologies across different cultures.

On the first hand, we can consider EAS methodology like a professional organizer. Working with EAS asks teachers to re-consider their usual habitus: so they put mind to their communication, assessment practices, planning activities, and may be that they could accept to change something.

About cultures, school cultures, it is clear that every country has its own tradition. So it is also clear that it is not so easy to bring a methodology, born in a certain culture, and exporting it in a different one. So, this is what is really interesting in the project: try to understand what changes in brazilian teachers reception of EAS; working together to a customization of the methodology itself.

References

- Cope, B., & Kalantzis, M. (Eds). (2000). *Multiliteracies: Literacy Learning and the Design of Social Futures*. London: Routledge.
- Damasio, A. (1994). *Descartes' Error: Emotion, Reason, and the Human Brain*. New York: Putnam Publishing.
- De Kerkhove, D. (1991). *Brainframes: Technology, Mind and Business*. Amsterdam: Bosch & Keuning.
- Francastel, P. (1951). *Peinture et société: naissance et destruction d'un espace plastique de la Renaissance au cubisme*. Paris, Lyon: Audin.
- Frith, P. (2007). *Making up the Mind: How the Brain Creates Our Mental World*. New York: Blackwell.
- Friston, K. (2010). The free-energy principle: a unified theory of the Brain?, *Nature Reviews Neuroscience*, AOP, published online 13 January 2010; doi:10.1038/nrn2787.
- Friston, K. (2012). A Free Energy Principle for Biological Systems. *Entropy*, 14, 2100-2121; doi:10.3390/e14112100.
- Gallese, V., Fadiga, L., Fogassi, L., & Rizzolatti, Giacomo (1996). Action recognition in the premotor cortex. *Brain*, 119 (2): 593–609.
- Gallese, V. (2005). Embodied simulation: From neurons to phenomenal experience. *Phenomenology and the Cognitive Sciences*, 4: 23–48.
- Gee, J.P. (2003). *What Video Games Have to Teach Us About Learning and Literacy*. New York: Palgrave MacMillan.
- Kandel, E.R. (2007). *In Search of Memory: The Emergence of a New Science of Mind*. New York: Norton & Company.
- Laurillard, D. (2012). *Teaching as a Design Science: Building Pedagogical Patterns for Learning and Technology*. London: Routledge.
- Levy, P. (1997). *Cyberculture. Rapport au Conseil de l'Europe dans le cadre du projet "Nouvelles technologies: coopération culturelle et communication"*. Paris: Odile Jacob.
- Pachler, N., Bachmair, B., & Cook, J. (2010). *Mobile learning: structures, agency, practices*. New York: Springer.
- Rivoltella, P.C. (2013). *Fare didattica con gli EAS. Episodi di Apprendimento Situato*. Brescia: La Scuola.
- Schön, D. (1984). *The Reflective Practitioner: How Professionals Think In Action*. New York: Basic books.
- Wolf, M. (2008). *Proust and the Squid: The Story and Science of the Reading Brain*. New York: Harper.
- Zeki, S. (1999). *Inner Vision: An Exploration of Art and the Brain*. Oxford: Oxford University Press.

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