



Pan-European policy experimentations with tablets

<http://creative.eun.org>

## WHAT IS THE LIBERATING LEARNERS MODEL, AND HOW TO USE IT?

Luís Valente & Maria João Gomes, Instituto de Educação,  
Universidade do Minho

October 2014

Creative Classrooms Lab | <http://creative.eun.org>

The project is coordinated by European Schoolnet and it has been funded with support from the European Commission.



## Table of contents

HOW DO WE LEARN? .....	3
LEARNING STYLES AND PREFERENCES .....	6
SKILLS FOR THE 21ST CENTURY.....	8
AUTONOMY AND LEARNING .....	9
SKILLS FOR LEARNING .....	11
IMPLICATIONS IN THE CLASSROOM.....	11
HOW DO I LEARN BETTER? .....	12
SUGGESTIONS (DESIGN OF THE LEARNING ENVIRONMENT).....	13
REFERENCES .....	17

## HOW DO WE LEARN?

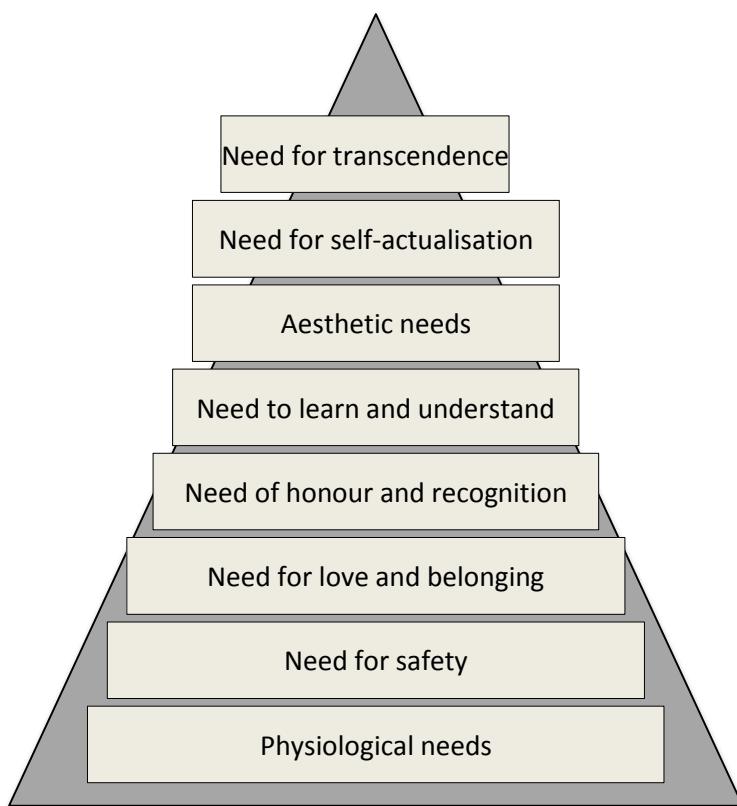
---

In this postmodern society, founded on knowledge, we will spend our whole lives learning. So, we absolutely need to take on the responsibility for our own learning process and to be aware that there are more opportunities to learn than those offered in school (Macdonald, 2001, p. 15). One of those first responsibilities is to understand how we learn, knowing beforehand that there are countless different ways of looking at that process, including for example, different types of intelligence and different learning preferences or styles.

We rarely focus on reflecting on the concept of learning, even when – as educators – the act of learning is at the centre of our daily tasks. Maybe for that reason, since it is so familiar to us, even commonplace, it seems so natural, so banal and so simple. However, learning is “a relatively permanent modification of behaviour as a result of experience” (Klein, 2011, p. 2), that is, it is something that tends to impact our personality in a definitive manner. Since learning occurs throughout our lifetime, as we grow older, it takes place in significantly different environments, contexts and times. Generally, all learning theories are interested in the process of acquiring, processing and retaining information during learning, but for us as educators it makes sense to adopt a holistic perspective of those theories, focusing specifically on engaging students in the educational activities that we provide them.

The main theories have a dichotomous view of the way children and adults learn. Children are perceptive and adults are conceptual; children are thematic and adults are taxonomic; children are concrete and adults abstract (Kuhn & Siegler, 2006, p. 689) when it comes to information and its processing. Whether we accept that distinction in learning methods according to our physical and intellectual maturation or whether we have another opinion of the learning process, it is not hard to see that learning is a complex process, one that we often try to simplify and outline with the intent of knowing it better. With this purpose, Banner and Cannon defined a set of twelve intrinsic elements of learning, without any of them being prevalent over others: industry, enthusiasm, pleasure, curiosity, aspiration, imagination, self-discipline, civility, cooperation, honesty and initiative (Banner & Cannon, 2001). John Holt, whilst not proposing a structured scheme, dealt with the interconnection of play and experimentation, of observation, thought and reflection, of speech, writing and reading, of sports, art, and mathematics, of fantasy and love, in the overall process of learning (Holt, 1995).

In 1943 Abraham Maslow proposed a systematisation of human motivation or needs, establishing five hierarchies of needs: (1) physiological, (2) safety, (3) love and belonging, (4) recognition or honour and (5) self-fulfilment (Maslow, 1943). More than two decades later, responding to many criticisms to his motivational theory, Maslow redesigned it by inserting at the top of the hierarchy the need to learn and understand and the aesthetic need (Maslow, 1970). In a posthumous publication of a collection of articles selected by Maslow himself, the need for self-fulfilment is reformulated and the pyramid (see Fig. 1Fig. 1) is topped with the need for self-transcendence (Maslow, 1993).

**Fig. 1** Maslow's Pyramid of basic needs

In his works on learning, Maslow also had the opportunity to present the concept of “intrinsic learning” which he defined as involving the processes that can lead people to become that which they are capable of achieving, in other words, becoming fulfilled, and “extrinsic learning”, which represents nothing more than adding things to a collection, as one would collect keys or coins or other objects. Maslow believed “intrinsic learning” to be the most important, since he held that it reflects the way people achieve self-fulfilment (Maslow, 1965).

When he presented a theory of cognitive development, which still today is the foundation for the majority of our concepts on learning, Piaget gradually pushed aside the compartmentalist theory of learning that prevailed. Piaget conceived learning as an investigative process in which children act as small scientists who gather information from their surrounding world, with which they formulate hypotheses and make conclusions on it, based on the knowledge that they already had. As such, learning happens through the assimilation of information and its organisation into the existing cognitive schemes, and it is noted that children resist changing their existing cognitive schemes without strong evidence to the contrary, stemming from experimentation. When it is not easy to assimilate the new input, there is a schematic accommodation or reorganisation. Learning is, therefore, a process of cognitive disequilibrium and reequilibrium.

Vygotsky, who in many aspects seems to agree with Piaget, recognises communication as a basic function of language, at the beginning egocentric and private and later as interior discourse, which we use in the representation and resolution of problems.

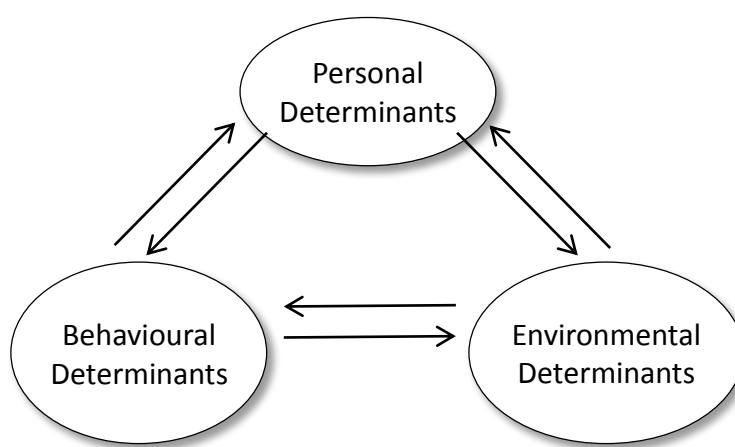
More recently, Jerome Bruner proposed the concept of cognitive scaffolding, a method of learning that seeks to help deepen levels of knowledge, propping up the new inputs on existing knowledge, adjusting itself to the students' needs and their objectives.

As it is obvious, in the past century, the main theories of learning moved essentially between a behavioural perspective and a cognitive one. However, the catalogue of learning theories is so vast that it would be wrong to limit our approach to merely these.

Currently, the paradigms associated with situated knowledge (or situated cognition), defined by Brown, Collins and Duguid (1989) have stood out in the concerns over change and educational innovation. These authors defend that learning develops through collaboration and social interaction and the social construction of knowledge. Based on Vygotsky's ideas of learning through social development, the concept of situated learning was first proposed by Lave (Lave, 2003; Lave & Wenger, 1991), arguing that learning is normally situated, that is, it occurs as an integrated part of activities, contexts and cultures. In this conceptual framework, social interaction and collaboration are fundamental factors of learning, leading students to be involved in "practicing communities" as precursors to learning. That movement of integration, which occurs from the periphery to the interior of communities, makes members more prone to be involved and may lead to expertise.

The Social Cognitive Theory emerged from the works of Neal Miller and John Dollard (Miller & Dollard, 1941), authors that highlighted four fundamental elements of learning: (1) drive or motivation – the student must want something; (2) cue or stimulus – the student must notice something; (3) response – the person must do something; (4) reward or reinforcement – the student must receive something desired.

This perspective, expanded by Albert Bandura, who highlighted its aspect of social learning, assumes that learning and behaviour have a reciprocal triadic relationship with the environment (see Fig. 2).

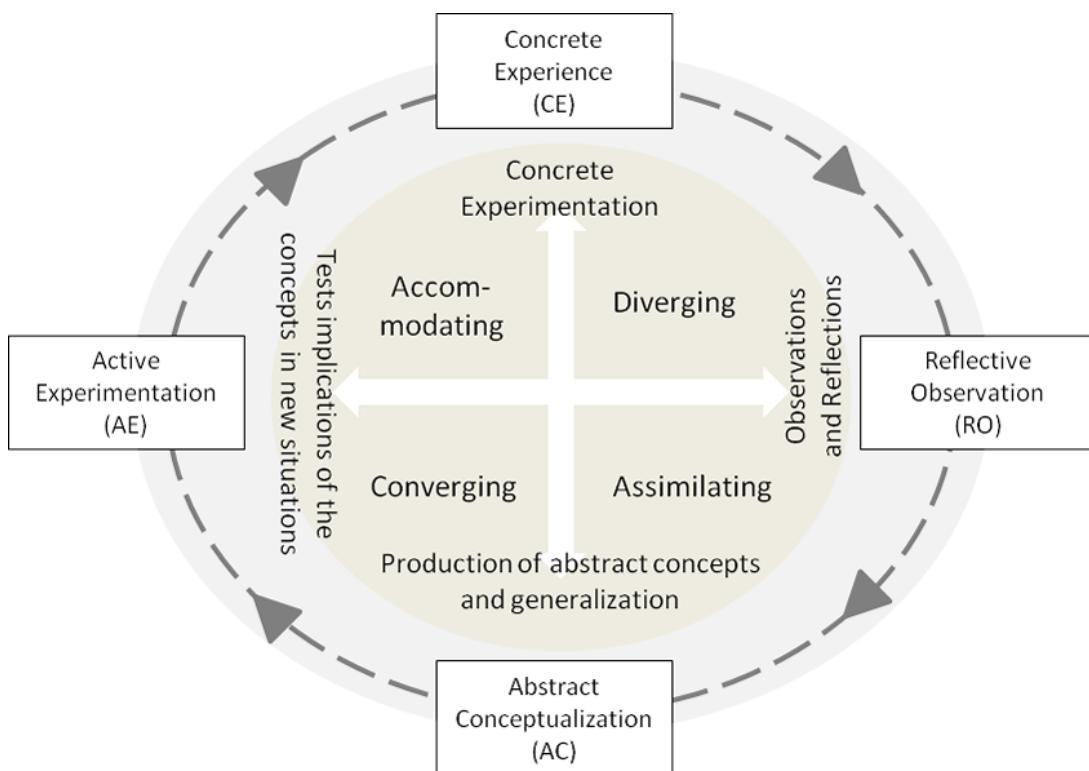


**Fig. 2 Reciprocal triadic causation of social cognitive theory, adapted from Bandura (2008, p. 122)**

From this point of view, the Social Learning Theory conceives of people learning through observing others and that environment not only influences personality but also is reflected in the individual's behaviour. Children tend to build personality profiles and mimic the behaviours they observe through a process of modelation which includes observation, imitation and integration. Family, friends, school and social groups frame the environment in which young people develop. In school, the teacher personifies the model.

Other approaches, which stood out in the last quarter of the twentieth century for example, connect preferences or modalities of learning with the students' preferred channels of information: visual, auditory or kinesthetic, related to sensitivity in movement, known by the acronym VAK – Visual, Auditory, Kinesthetic (Barbe, Swassing, & Milone, 1979). A variant of this approach is proposed by Neil Fleming (Fleming, 1992), which is widely used, for example, in teaching how to drive a car. Fleming's proposal includes associating the tactile feelings of reading

and writing (Read/Write), changing the acronym to VARK. According to this perspective, learners will prefer to use Vision, Hearing, Reading/Writing and Kinesthesia in their learning activities.



**Fig. 3 Interpretation of Kolb's cycle of experiential learning.**  
Diagram adapted from Kolb, Boyatzis and Mainemelis (2001).

Alice and David Kolb (A. Y. Kolb & Kolb, 2005), authors of Experiential Learning Theory, ELT, whose model is shown in Fig.3, state that learning is developed over four stages: Concrete Experience, Reflexive Observation, Abstract Conceptualisation and Active Experimentation; and according to four learning styles which represent the combination of two immediately connected styles: Divergence (CE/RO), Assimilation (RO/AC), Convergence (AC/AE) and Accommodation (AE/CE).

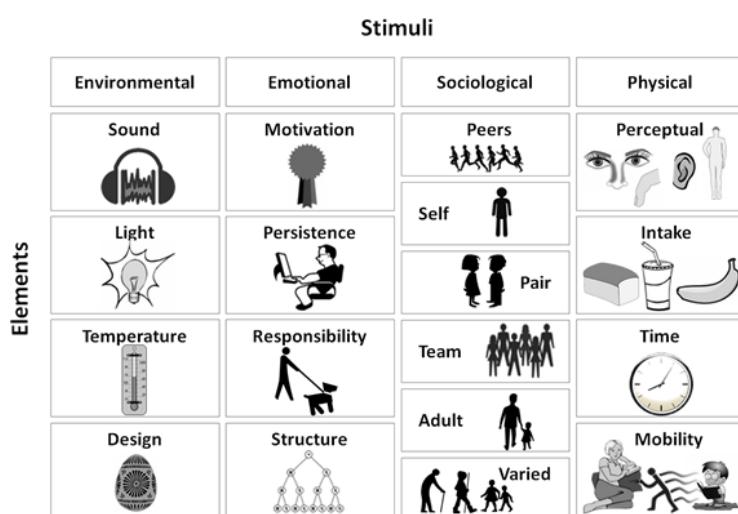
## LEARNING STYLES AND PREFERENCES

Even if it is not possible to unequivocally associate the preferred vehicles for accessing information with the results of learning, we need to consider each characteristic as a potential influencer in the creation of knowledge. Human interaction with the environment is primarily through the use of sensory organs. Some researchers have focused on the study of what the preferential vehicles are for each of us, grouping them into learning styles, modalities or preferences. The adaptation of teaching strategies to learning styles is one of the factors for success in school.

Developed in the 1980s by Howard Gardner (Gardner, 1993), Multiple Intelligence Theory maintains that we understand our surrounding world by using various ways or intelligences, initially identifying at least seven: (1)

linguistic intelligence, associated with the ability to use written words or express ourselves orally; (2) logical-mathematical intelligence, recognised by the use of deductive and inductive thought and by the ability to reason logically, recognise abstract patterns and use numbering; (3) spatial intelligence, related to our ability to isolate ourselves from reality and to mentally visualise objects and spaces; (4) body-kinesthetic intelligence, that is, the ability to deliberately control our body's physical movements; (5) musical intelligence, expressed in the ability to make music, to produce rhythms and sounds; (6) interpersonal intelligence, seen in the ability to effectively communicate with other people and to be able to develop relationships; (7) intrapersonal intelligence associated with the need to know ourselves, to understand our emotions, motivations and inner states and to reflect on our actions and our thoughts. Later, Gardner finally considered it worth including a new intelligence: (8) naturalist intelligence, that which allows one to recognise, classify and organise several organisms and entities in the natural world (Gardner, 1999, 2011).

Some researchers dedicated themselves further to the study of the higher cognitive functions and the way that learning is related to stimuli and the affected cerebral zones. Among them, Rita and Kenneth Dunn (Dunn & Dunn, 1979) argued for the organisation of stimuli into 4 types: environmental, emotional, sociological and physical, organising into these groups the elements that most obviously influence the students' learning style (see example in **Error! Reference source not found.**)



**Fig. 4 Diagnostic of learning styles**  
Diagram adapted from Rita Dunn and Kenneth Dunn (1979)

Other authors, among whom are Peter Honey and Alan Mumford (Honey & Mumford, 2006) are more interested in studying the learners' attitudes and believe that a learner can deal with learning as an Activist, Reflector, Theorist or Pragmatist.

Activists are the individuals who learn by doing. Their preferred activities include brainstorming, problem solving, group discussion, puzzle assembly, contests and the playing of roles or functions. The Reflectors prefer to learn by observation and thinking over events. Their preferred activities are discussions with peers, self-analysis and personality questionnaires, activities of observation and those that include other people's feedback. They like to rehearse and give interviews. The Pragmatists need to envision how what they learn can be applied in the real world. Their preferred activities include time to think about how to apply learning to reality, case

studies, problem-solving and debate. The Theorists like to understand the theories underlying actions, the why of things. Their preferred activities include theoretical models, statistics, stories, quotes, deeper information and the application of theories.

## SKILLS FOR THE 21ST CENTURY

---

In order for students to achieve success at school in an increasingly digital and connected era, they must develop new skills and literacies. Digital literacy assumes an importance that matches traditional alphabetization, media literacy, learning skills, self-learning and innovation or creativity.

All over the world, 21st Century Skills are the centre of attention for researchers, professors and government leaders. In the last decade of the past century, concerns about the educational reorientation that the new millennium brought with it were already apparent.

A UNESCO report, for example, assumed that “at the centre of the complexity of learning is the individual, the student, in his own individuality” and “the recognition of the student as an active, and even a driving force of the learning process and for the self-fulfilment of the range of potential in that process is a fundamental aspect in reorienting education” (Singh, 1991, pp. 71-72). The same document projected the development of two completely opposite models of approaching educational reform: (1) model A, with the educational objective of promoting and fostering the various personality facets of the student – physical, emotional, intellectual, social and ethical and (2) model O, with objectives being limited to the “principles” of reading, writing and arithmetic (Singh, 1991, pp. 45-46).

This concern emphasises, in and of itself, the importance of developing skills that are indicated as essential for a citizen of the 21st century. P21 - Partnership for 21st Century Skills – shows the same concerns in studies conducted by economic agencies and innovative companies, stating that in order to continue growing as required by society, they must have workers with more and better training, who are able to respond to complex problems with flexibility, communicate effectively, generate information, work as a team and create new knowledge (Partnership for 21st Century Skills, 2008).

The OECD also came out and highlighted the urgency of focusing on the essential 21st century skills, warning that they should be covered from more than one dimension: (1) the informational dimension and (2) the communicative dimension (Ananiadou & Claro, 2009). Within the scope of the informational dimension, that document believes that skills should be regrouped into two subdimensions: (i) considering the information as a source: understanding the skills to identify, search for, select, evaluate and organise information; (ii) considering the information as a product, involving the skills of restructuring and remodelling information and developing one's own ideas, i.e. knowledge. Within the spectrum of the communicative dimension, a subdivision into two subdimensions is also recommended: (i) effective communication, encompassing collaboration and virtual interaction and (ii) ethical issues and social impact, including the skills of responsibility and social impact.

In the European Union, the report by the association representing information technology professionals on the needs for workers qualified in the area of Information and Communication Technologies (CEPIS, 2007) and the communication of the Commission to the Council, Parliament, Economic and Social Committee and the

Committee of the Regions (European Commission, 2007) on 21st century skills both called attention to the non-existence of a European policy on the cyberskills needed to ensure competitiveness and growth.

We see, therefore, a focus on developing the individual's skills that is increasingly connected to the environment where the individual is found, forcing a global approach to learning. From this point of view, learning takes into account the individual, the context and the objectives of the individual's community with the intent of promoting his adaptability, flexibility, initiative, autonomy, leadership, responsibility and productivity, developing skills related to technologies, media and information, learning and innovation, social and intercultural skill.

## AUTONOMY AND LEARNING

---

John Holt (1995) made an appeal that the school should not trust in itself but if it was tempted to do so, he suggested that the community not allow it. However, trust should be placed completely in the children. Trust that they will learn, he stated! From Holt's point of view, school has become too big, depersonalized, threatening and dangerous, where teachers are less and less able to influence decisions on what they teach, how they teach and how they evaluate, and it is necessary to combat passivity in both students and teachers alike. The school cannot be based on industrial processes, where everything is planned and predetermined to the smallest detail, where subjects studied are increasingly unrelated to anything. This type of diagnosis of school ecology needs to take into account differences in students' styles and learning preferences.

Paraphrasing Sugata Mitra (Mitra, 2010), children will learn that which they want to learn to do, in other words, the will is a type of fuel for learning. In this sense, the development of autonomy and the student's taking responsibility for his own learning are ways of empowerment that are suited to the current educational paradigms. In spite of the development of autonomy within learning processes not being determined by technology, we recognize that the ambitious and innovative use of technologies is essential to its implementation (Ballard & Butler, 2011). But autonomy in learning within formal contexts is not just about the process of accessing and acquiring knowledge, but also its evaluation and dissemination, requiring the establishment of action strategies towards change. The extension of schooling, the diversification of educational aids to exceptional students, including those who are not successful and those who attain the standards of excellence, and the availability of alternative or supplemental curricula are examples of measures that we see adopted by educational reform programmes here and there around the world.

The development of autonomy in learning and personalisation are inseparable elements of modern education concepts, based on principles related more to marketing and globalisation than ideas that have guided education. Personalisation is a type of co-customisation that seeks to increase the options of choices for education "consumers".

The concept of autonomy in learning can take us to that of independent learning which Moore describes according to two dimensions: (1) distance teaching supported by a large family of teaching methodologies used in such a way as to allow communication between the teacher and the student to be carried out via print, electronic, mechanical or other devices and (2) the student's autonomy, enabled by his dialectic ability to control and influence what he learns. Within this context, the autonomous student seeks out the teacher when he needs

help to formulate problems, gain information, evaluate progress and so forth, surrendering some of his autonomy in order to be guided by the teacher (Moore, 1972).

Independent learning, just as Moore conceptualised, is made up of three subsystems: the student, the teacher and the communication method (Moore, 1973). In order to understand the student system, it is necessary to understand the concept of the “autonomous student”, to understand the system of communication, it is necessary to use the concept of “distance teaching” and to understand the system of teaching, it is necessary to remove ourselves from traditional teaching concepts and modify them according to the limitations and opportunities that come as a result of distance and autonomy (Moore, 1973, p. 663).

But the concept of independent learning or self-regulated learning is a dynamic concept, modelled by the contributions of research in different places. It does not mean that the student learns or works alone; quite to the contrary, it means that the student is the main person responsible for his learning. However, the teacher has an extremely important role in supporting and facilitating learning conditions.

Self-regulated learning presents the student with internal and external requirements. From an internal perspective, we need to consider individual cognitive, metacognitive and affective skills, the relationship with teachers and colleagues, encompassing mutual trust and responsibility for learning. Standing out from an external point of view are (1) making environments conducive to learning; (2) schools that develop an educational approach centred more on students and that provide adequate resources and materials; (3) the presence of teachers who are attentive and sensitive to the students' interests and needs; (4) the cooperation between peers and the connection with the students' family units (Meyer, Haywood, Sachdev, & Faraday, 2008).

## SKILLS FOR LEARNING

---

This text would allow us to extract and organize an essential nucleus of skills needed for self-regulated learning, but we have opted to present a table that summarises the review of literature produced on this subject by Meyer and associates (see Table 1), organised into cognitive skills, metacognitive skills and affective skills.

**Table 1** Skills for self-regulated learning (based on Meyer et al., 2008)

Cognitive skills	Metacognitive skills	Affective skills
Memory, attention and ability to solve problems.	Skills associated with understanding how learning happens; self-evaluation of learning.	Skills related to feelings and emotions.
Students need to achieve a certain level of cognitive development in order to decode basic information and to proceed independently with learning.	Students must be capable of identifying other people who can help them with their learning.	Students need to develop a value system, and internalize and act upon those values.
Teachers must be capable of promoting that cognitive development in order to encourage independent learning.	Teachers must be capable of identifying the levels of self-responsibility in students and provide them with activities for growth and development.	Motivation is considered the most important affective skill and is directly related with the improvement of independent learning and may also be a result of learning.

## IMPLICATIONS IN THE CLASSROOM

---

One of the main features of independent learning is the greater involvement and responsibility given to the students for their own learning. The teacher steps out of the traditional role as being the sole conductor of the educational process and assumes the personification of another role, that of monitor, counsellor and supervisor. The teacher adapts the language to the learning process, adopts a range of methodologies and differentiated strategies according to the prior knowledge of the students, helping them to model behaviours and attitudes, providing feedback on all their work and performance, encouraging them to make self-evaluations, practice self-reflection and define personal goals.

The teacher is a motivator for the students, who helps them to discover their potentials and their weak points, who engages them in their learning process, leading them to overcome the obstacles. The teacher is the counsellor who helps them discover the best way for each of them to be more efficient in the task of learning, helping to perfect techniques for studying and processing information. The teacher is also the supervisor who helps to plan strategies and maintain activity schemes in the direction of the students' personal goals, who

promotes self-criticism, self-achievement and the regulation of self-esteem. The teacher is the producer who provides the means and resources of the learning environment that are suited to the configuration of the work teams and the application of the collaborative methodologies.

Lastly, the literature acknowledges that the success of independent learning needs the broader involvement of the entire school. In speaking of that, it is worth citing part of the parable of Rubem Alves on the school he imagined, going back to the model of a medieval workshop as an approximation of the school that promotes independent learning.

The master artisan did not determine how the object to be produced by the apprentice should turn out. As a group the apprentices went about their work, each one doing his own thing. They didn't have to reproduce an ideal object chosen by the master. The master was at the service of the apprentices and not the apprentices at the service of the master. The master walked around the workshop, giving a suggestion here and there, showing what had not turned out well, showing what to do for it to be better (a wonderful model for "evaluation"). It was hard work, doing and redoing. But the apprentices worked without having to have someone tell them they ought to work. They worked with concentration and joy, intelligence and emotion, in a joint effort. This always happens when you are trying to produce your own face (and not the face of another). In the end, when the work was done, the apprentice smiled happily, admiring the object produced. (Alves, 2004, p. 26)

## HOW DO I LEARN BETTER?

---

Considering the different styles and preferences for learning, each of us may have a preference for certain configurations of the learning environment, for different styles of teachers, for different fields of knowledge, for different modes of working. Discovering how our effort is more efficient and our time is best spent is not easy and the possible results are not definitive. In certain contexts we may prefer certain combinations and in other contexts, other combinations. But there are forms and instruments that can help us understand how we learn better. Those who know us best and have watched us learn, whether teachers or parents, are our first source of information. Then, we ourselves, reflecting on what we have already learned, can determine what and how we learn best, more easily, or with more enthusiasm and how we achieve the best results. This self-assessment can be aided by additional instruments, such as questionnaires, that help to determine preferences or learning styles.

There are various questionnaires in this field that are available online:

(1) VARK (*Visual, Aural/Auditory, Read/Write, Kinesthetic*) developed by Neil Fleming, accessible at: [www.vark-learn.com/english/page.asp?p=questionnaire](http://www.vark-learn.com/english/page.asp?p=questionnaire);

(2) VAK (*Visual, Auditory, Kinesthetic*) available at:  
[www.businessballs.com/freepdfmaterials/vak\\_learning\\_styles\\_questionnaire.pdf](http://www.businessballs.com/freepdfmaterials/vak_learning_styles_questionnaire.pdf);

(3) *Free multiple intelligence test*, downloadable from:  
[www.businessballs.com/freematerialsinexcel/free\\_multiple\\_intelligences\\_test.xls](http://www.businessballs.com/freematerialsinexcel/free_multiple_intelligences_test.xls)

Most of us, however, do not have a clearly preferred style, so that the use of these or other questionnaires must be seen as simply an auxiliary indicator of the learning styles preferred by each of us.

## SUGGESTIONS (DESIGN OF THE LEARNING ENVIRONMENT)

---

No strategy or methodology will be suited for all learning situations. In order to bring the strategy close to the goals, it is necessary to know the students, not just in terms of their cognitive background, but their personality, their potentials and their weaknesses, as well.

The design of the learning environment is a very important aspect, one on which the teacher should invest some time, making it more welcoming, diversified, and able to be personalised. The inclusion of natural elements, plants or even animals, for example, may be justifiable in certain circumstances. Likewise, the use of redundant elements, schemes, graphs and images, will help to enrich the informative elements. The conjugation of text and colours, using distinctive supports to highlight some aspects or particularities, such as post-its, for example, may prove to be strategically important and reach a larger number of students in a more significant way.

The organisation of homogeneous or heterogeneous groups, taking into consideration the preferences or learning styles of the students and the types of tasks, is another resource that helps to create working environments that are more pleasant and productive.

The place where the learning activities are held is also important. Students who like nature, for example, achieve better results in open-air activities, and therefore, the organisation of visits to nature responds well to their interests. But laboratories, work-shops, museums and libraries, and the real contexts of work are spaces with great potential for classes of almost any subject. In some cases, holding activities in contexts outside the classroom helps to answer the eternal question asked by students about what use does what they are learning have. The involvement of the students in the configuration of these learning environments also helps them to more realistically define their personal objectives and goals.

In the assignments, which may be done in teams, different logistical, informative, organisational, communicative, record-taking and assessment skills can be made use of. In other activities the option may be considered to use background music, either negotiated with the students or by deliberate choice of the teacher, for doing memorisation or other tasks that are more monotonous. In this regard, role play may be brought in, with the use of real or imagined props and simulating scenes from real life, problem situations, decision-making circumstances based on argumentation, Socratic inquiry, the defence of differing points of view, or, simply, speculation. Some techniques, such as that of the six thinking hats (de Bono, 1988), are very interesting in dynamic learning environments.

The use of work techniques with larger groups, focus groups and brainstorming sessions, make it possible to obtain multiple and distinct ideas and concepts, which can be organised using analogical or digital means and then sharing them, prolonging their presence. The brainstorming technique is extremely versatile and can be used for practically any subject and for any purpose. It can be a starting point for the inspiration for a project or activity, or a point of arrival, to consolidate the learning or evaluation of a learning process.

When planning the activities, one cannot forget to include moments of relaxation, intervals for rest or for doing other things, and to schedule times for participation using bodily activity. Handling objects, using the hands, doing something with the body helps to maintain concentration and improve the levels of motivation. Another factor to take into account is the consecutive attention span. Although this varies, according to John Medina, it has 10-minute cycles (Medina, 2008), so that it is necessary to find ways of (re)motivating students at approximately this rate, creating moments of situational interest with greater frequency.

Summarising an activity, highlighting a key idea and making a list of positive and negative point of the activity is a well-known technique. Even so, it can gain even more importance if done systematically and if distinct responsibilities are assigned to the students, according to their prior skills or to those that are to be further developed. The records, of the learning diary type, may be made using different techniques and resources, individually or collectively. This type of activity provides excellent opportunities to integrate equipment, devices and techniques for the production of documents, posters, banners, photos, videos, podcasts, newspapers, blogs, etc., in the work projects. Publishing is a powerful way to enhance the value of the students' work, besides creating opportunities to exercise multiple skills and appeal to creativity and autonomy.



### Dream

---

The Dream activities are aimed to achieve the following objectives:

- Be more successful in self-teaching and in one's own reflections and mental conceptions;
- Take responsibility for one's learning and increase self-confidence and the assumption of responsibility.
- Become aware of how persons learn and identify one's own learning preferences.

The use of some structured instruments is suggested to better understand the learning styles or preferences of the students, such as questionnaires, for example, as well as debate/reflection (brainstorming) in a large group on how each one thinks he/she learns better: in what working conditions, with what resources, in situations of team or individual work, for example? Analogical resources can be used, such as chalk or whiteboards, posters, sets of cards or post-it notes, or digital means, such as Padlet, Popplet or other software suited for the creation of concept maps or similar schemes. The use of testimonies from persons of different professions or social standing, in person or recorded, can be an asset for this activity.



### Explore

---

The stories of learning related to Explore should lead to discoveries that help to answer the question of how the students learn, invoking the very successful and not-so-successful learning experiences each student has had.

Invite persons from the community or those who are well known and are successful in their profession, interviewing them collectively or leading a less structured conversation, so that they speak about their strategies for learning the easiest things and the most difficult things.

Lead the students to create memoires of their past and current learning experiences, analysing them and then, as a group, talk over their conclusions.

Find techniques to improve skills in memorising, research and information organisation. The use of mind-training exercises, games of skill and memorisation, word games, games of orientation, etc., and the recording of images are approaches that are potentially value-enhancing.



Map

---

In the Map activities, the students are to analyse the results of the diagnostic activities of their knowledge, skills or styles of learning, preferences or autonomous intelligence, to try to understand what they mean to each student and each class.

The students need to be helped in identifying the areas in which they need to improve their learning skills to raise the levels of their academic results and to plan activities that meet those needs. The planned activities may include individual or team assignments, at school or outside it.

The student should identify the types of help that are within their reach and plan to make use of them in their projects and activities, in order to improve their skills.



Make

---

The Make activities seek to establish a work base for each one, directing the effort to his potentials and his weaknesses in learning, but having the group as the centre of operations. The students should experiment with new forms of learning, using new tools and a new vocabulary, directed towards the development of diversified learning skills.

Opportunities must be created to exercise the learning skills and articulate them with the pace of individual progress and cognitive development, having in mind those who have more difficulties and those who are more gifted. The attempt should be made to produce knowledge on the way (the students) learn best, but also to encourage the students to reflect on their own learning and how to develop the fundamental skills to improve the results of their effort and dedication.



Ask

Ask involves the development of learning skills identified in accordance with the feedback from others. If possible, the students should come in contact with examples that can inspire them, helping them to be more autonomous and independent.

The individual needs must be taken into consideration, in accordance with their physical, social and cognitive needs. This is the moment to reflect on and assess the work carried out in comparison with the results achieved.



Remake

In Remake it is hoped that the strategies for the development of learning skills will be fine-tuned, articulating them with the feedback.



Show

The hope is that the students will publicly present the results of the work they have done, with the idea of improving their learning skills. The sharing of constructed knowledge serves to encourage and motivate other students, and also build up their self-esteem and the recognition of the school community. This is an opportunity to explore the creative abilities of the students and use them for the specific purpose of communicating.

## REFERENCES

---

- Alves, R. (2004). *A Escola com que sempre sonhei Sem imaginar que Pudesse Existir* (7.<sup>a</sup> ed.). Campinas, SP: Papirus.
- Ananiadou, K., & Claro, M. (2009). 21st Century Skills and Competences for New Millennium Learners in OECD Countries. *OECD Education Working Papers* (Vol. 41). Paris: OECD Publishing.
- Ballard, J., & Butler, P. (2011). Personalised Learning: Developing a Vygotskian Framework for E-learning. *The International Journal of Technology, Knowledge & Society*, 7.
- Bandura, A. (2008). Social Cognitive Theory of Mass Communication. In J. Bryant & D. Zillmann (Eds.), *Media effects: Advances in theory and research* (Taylor & Francis e-Library, 2nd ed., pp. 121-153). Mahwah, NJ: Lawrence Erlbaum.
- Banner, J. M., & Cannon, H. C. (2001). *The Elements of Learning*. New Haven, CT: Yale University Press.
- Barbe, W. B., Swassing, R. H., & Milone, M. N. (1979). *Teaching Through Modality Strengths: Concepts and Practices* (Reprinted ed.). Columbus, OH: Zaner-Bloser.
- Brown, J. S., Collins, A., & Duguid, P. (1989). Situated Cognition and the Culture of Learning. *Educational Researcher*, 18(1 Jan-Feb), 32-42.
- CEPIS. (2007). Thinking Ahead on e-Skills for the ICT Industry in Europe: Harnessing our Strengths and Diversity for the World Stage. Brussels: Council of European Professional Informatics Societies.
- de Bono, E. (1988). *Six Thinking Hats: An Essential Approach to Business Management*. Barcelona: Editions Juan Granica S.A.
- Dunn, R. S., & Dunn, K. J. (1979). Learning Styles/Teaching Styles: Should They... Can They... Be Matched? *Educational Leadership*, 36(4), 238-244.
- European Commission. (2007). *Communication from the Commission to the Council, the European Parliament, the European Economic and Social Committee and the Committee of the Regions - E-skills for the 21st century: fostering competitiveness, growth and jobs*. (COM(2007) 496 final). Commission of the European Communities Retrieved from <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52007DC0496&from=EN>.
- Fleming, N. D. (1992). Not Another Inventory, Rather a Catalyst for Reflection. *To Improve the Academy*, 11, 137-155.
- Gardner, H. E. (1993). *Multiple Intelligences: New Horizons in Theory and Practice* (1st ed.). New York, NY: Basic Books.
- Gardner, H. E. (1999). *Intelligence Reframed: Multiple Intelligences for the 21st Century*. New York, NY: Basic Books.
- Gardner, H. E. (2011). *Frames of Mind: The Theory of Multiple Intelligences* (3 ed.). New York, NY: Basic Books.
- Holt, J. (1995). *How Children Learn* (Revised ed.). Cambridge, MA: Da Capo Press.
- Honey, P., & Mumford, A. (2006). *The Learning Styles Helper's Guide* (Rev. 2<sup>nd</sup> ed.). Maidenhead, UK: Peter Honey Publications.
- Klein, S. B. (2011). *Learning: Principles and Applications* (6th ed.). Thousand Oaks, CA: SAGE Publications, Inc.

- Kolb, A. Y., & Kolb, D. A. (2005). *The Kolb Learning Style Inventory—Version 3.1: 2005 Technical Specifications*. Boston, MA: Hay Group.
- Kolb, D. A., Boyatzis, R. E., & Mainemelis, C. (2001). Experiential Learning Theory: Previous research and new directions. In R. J. Sternberg & L.-F. Zhang (Eds.), *Perspectives on thinking, learning, and cognitive styles* (pp. 193-210). Mahwah, NJ: Lawrence Erlbaum.
- Kuhn, D., & Siegler, R. (Eds.). (2006). *Handbook of Child Psychology: Cognition, Perception, and Language* (6th ed. Vol. 2). Hoboken, NJ: John Wiley & Sons.
- Lave, J. (2003). *Cognition in Practice: Mind, Mathematics and Culture in Everyday Life* (Digital printed ed.). New York, NY: Press Syndicate of the University of Cambridge.
- Lave, J., & Wenger, E. (1991). *Aprendizaje Situado. Participación periférica legítima* (M. Espíndola & C. Alfaro, Trans.). New York, NY: Cambridge University Press.
- Macdonald, C. (2001). *Getting a Life: Strategies for Joyful and Effective Living* (Acrobat eBook ed.). Charlottetown, Canada: DeepUnderstanding.
- Maslow, A. H. (1943). A Theory of Human Motivation. *Psychological Review*, 50(4), 370-396.
- Maslow, A. H. (1965). Self-Actualization and Beyond *Proceedings of the Conference on the Training of Counselors of Adults* (pp. 108-131). Chatham, MA: The New England Board of Higher Education & The Center for the Study of Liberal Education for Adults.
- Maslow, A. H. (1970). *Motivation and Personality* (Reprinted ed.). New York, NY: Harper & Row, Publishers.
- Maslow, A. H. (1993). *The Farther Reaches of Human Nature* (1st ed.). New York, NY: Penguin Compass / Arkana.
- Medina, J. (2008). *Brain Rules: 12 Principles for Surviving and Thriving at Work, Home, and School*. Seattle, WA: Pear Press.
- Meyer, B., Haywood, N., Sachdev, D., & Faraday, S. (2008). Independent Learning: Literature Review. London, UK: Learning and Skills Network.
- Miller, N. E., & Dollard, J. (1941). *Social learning and imitation*. New Haven, CT: Yale University Press.
- Mitra, S. (2010). Sugata Mitra: The child-driven education. *TED Ideas worth spreading* [Talk]. New York, NY: TED Conferences, LLC.
- Moore, M. G. (1972). Learner autonomy: the second dimension of independent learning. *Convergence*, 5(2), 76-88.
- Moore, M. G. (1973). Toward a Theory of Independent Learning and Teaching. *Journal of Higher Education*, XLIV(12), 661-679.
- Partnership for 21st Century Skills. (2008). 21st Century Skills, Education & Competitiveness: a resource and policy guide. Tucson, AZ: Partnership for 21st Century Skills.
- Singh, R. R. (1991). *Education for the twenty-first century: Asia-Pacific perspective*. Bangkok: UNESCO.

The work presented on this document is supported by the European Commission's Lifelong Learning Programme - project Creative Classrooms Lab (Grant agreement 2012-5124/005-001). The content of this document is the sole responsibility of the consortium members and it does not represent the opinion of the European Commission and the Commission is not responsible for any use that might be made of information contained herein.



