

Heavy switchers in translearning: from formal teaching to ubiquitous learning

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Abstract

Purpose – *The aim is to explore the role of personal learning environments in an already ICT-dense context and in combination with some educational approaches in the field of technology enhanced education. The paper seeks to analyze how personal learning environments are not a device but a learning strategy that threatens the way educational institutions and their functions are understood, by contributing to enable a borderless learning society.*

Design/methodology/approach – *The research begins by revisiting Vygotsky's concept of the zone of proximal development and assesses the role of educators and educational institutions as the actual more knowledgeable others in scaffolding learners' learning paths. This role is put in relationship with different learning scenarios (formal, non-formal, informal and autodidactic) according to their inner structure (or lack of) and degree (or absence) of planning. The research then puts PLEs in relationship with other "physical" spaces (VLEs and LMSs), the digitization of content (open educational resources), records and assessments (e-Portfolios) and the possibility to flip some traditional tasks or processes that enabled regaining the social component in the classroom (Education 2.0).*

Findings – *It is suggested that PLEs have come to close the circle of ICTs in education with a highly transformative power: the power to blur the boundaries between formal teaching and informal learning. Indeed, the traditionally difficult transition from one learning scenario to a different one has been made smoother by the appearance of OER and, especially, social media constructs that can be used for learning purposes, especially within a PLE-based strategy.*

Originality/value – *It is stated that institutions should embrace and even foster the possibility that learners could easily and intensively switch educational resources, just like they could shift among different registers and learning scenarios, as a newly enabled way to tear down the artificial divisions that formal learning edified.*

Keywords *Personal learning environments, E-portfolios, Open educational resources, Informal learning, Social media, Education 2.0, Instructional technology, Learning, Education, Social change*

Paper type *Conceptual paper*

Personal learning environments and the revolution of Vygotsky's zone of proximal development

Developmental psychologist Lev Vygotsky (del Río and Álvarez, 2007; Vygotsky, 1991, 2001) defined what the person or a student can do – or the problems they can solve – as three different stages:

1. What a student can do on her own, working independently or without anyone's help.
2. What the student can do with the help of someone.
3. What lies beyond the student's reach even if helped by someone else.

He called the second stage the zone of proximal development (ZPD) which had two limits: the lower limit, which was set by the maximum level of independent performance, and the upper limit, the maximum level of additional responsibility the student can accept with the

The author wishes to thank Professor Linda Castañeda for her comments on an early version of Figure 3. Much of the improvements of this latest version owe much to her. The author's sincerest gratitude goes too to César Córcoles for his insights in the last version of the document.

assistance of an able instructor. But “Vygotsky believed that learning shouldn’t follow development, but rather should lead it. A student should constantly be reaching slightly beyond their capabilities rather than working within them” (Turner-Attwell, 2010).

This reaching beyond one’s capabilities can be pictured as the student entering their zone of proximal development. And, this exploration beyond one’s capabilities is not to be made alone, but with an instructor to help in the process. Vygotsky called this instructor the more knowledgeable other (MKO), whose role is helping the student across her ZPD by scaffolding the path she has to follow in order to learn how to solve new problems (Figure 1).

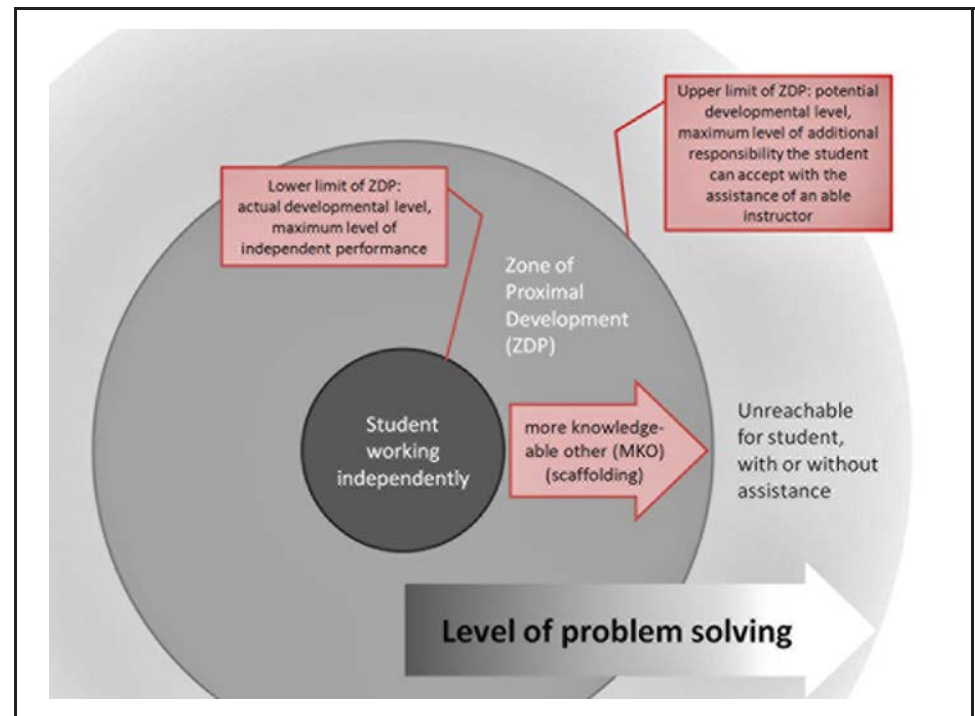
The personal learning environment and the zone of proximal development: a static approach

A personal learning environment (PLE) is defined as a set of conscious strategies to use technological tools to gain access to the knowledge contained in objects and people and, through that, achieve specific learning goals.

The personal learning environment can be understood both as the zone of proximal development plus the full set of more knowledgeable others. This involves understanding more knowledgeable others not only as people of flesh and blood, but also as any kind of knowledge construct that we may imagine: from more traditional lecturers and open educational resources to a wider ecology of digital content including messages in forums, multimedia files and so on. As Graham Attwell (2010) states, “the MKO can also be viewed as a learning object or social software which embodies and mediates learning at higher levels of knowledge about the topic being learned than the learner presently possesses.”

However, if we really believe that the personal learning environment is much more than a tool (Kalz, 2005; Roberts *et al.*, 2005), and serves a learning philosophy, there is much more than we can say about the crossroads of the PLE and the ZPD. The personal learning environment is transferring some – or most – of the responsibility on one’s learning path from the instructor (back) to the learner. And, in doing so, it also implies regaining control of one’s own learning path and its design. In relationship with the zone of proximal development:

Figure 1 Vygotsky’s zone of proximal development



The role of a personal learning environment may be not only that of a tool to provide access to “more knowledgeable others” but as part of a system to allow learners to link learning to performance in practice, through work processes. And taking a wider view of artifacts as including information or knowledge accessed through a PLE, reflection on action or performance may in turn generate new artifacts for others to use within a ZPD (Attwell, 2010).

The personal learning environment and the zone of proximal development: a dynamic approach

All these reflections stand for a static approach to the zone of proximal development, at a given time and place. Indeed, in Vygotsky’s time, the boundaries of the ZPD were very physical: the evolution of a wood carver’s craftsmanship was bound by the availability of master craftsmen and the possibility to be an apprentice in a nearby workshop.

But information and communication technologies have overturned the previous paradigm and, thus, the relationship between personal learning environments and the zone of proximal development should not be approached only within the state of things prior to the Internet, but also taking into account how this state of development is shifting forward.

Thus, one way to look at the ZPD-PLE relationship in a knowmad society is seeing the PLE as a way to build, fill in with or reach out for the tools and people that will help a learner through the ZPD. Another way to look at the ZPD-PLE relationship is by studying how the PLE continuously and dynamically (re)defines the ZPD itself.

In a digital world, with electronic access to information and communications, content and people are always available. Maximally speaking, a PLE can be made up by virtually everything that exists in cyberspace. If virtually everything is within reach, virtually everything can be understood as a more knowledgeable “other.” With full, comprehensive access to more knowledgeable others there is virtually no upper limit to the zone of proximal development, and there is virtually no level of problem solving unreachable to the student.

Thus, the PLE has two roles in relationship with the ZPD:

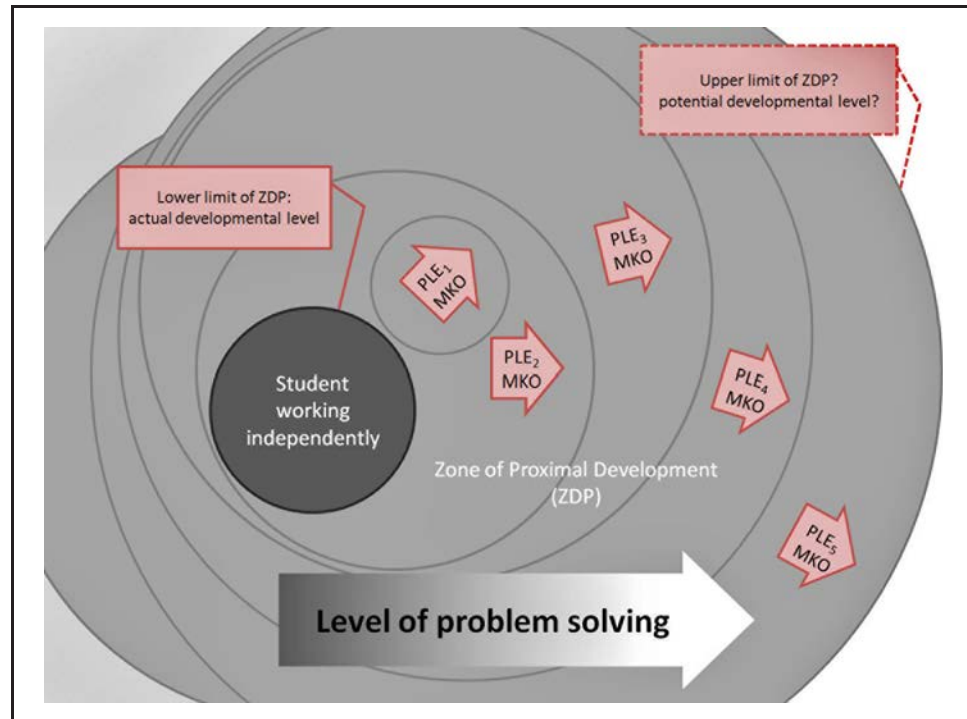
1. It helps in building the inner structure of the ZPD, its components.
2. It helps in building the outer structure of the ZPD, its boundaries.

We can consider a corollary to the second role. In Vygotsky’s time, learning – and hence the ZPD – was mostly linear: woodcarving apprentices would move “up” to a new master craftsman once they had mastered some skills themselves with the help of their previous/actual master. Progress would end when there were no more master craftsmen from whom they could learn. On the other hand, learning in a face-to-face scenario with a human MKO meant not only that one had to “use them up” but also that one could not “consume” any other more knowledgeable others: learning was unidirectional and linear.

When all kind of tacit and explicit knowledge constructs in one’s PLE are potential MKOs, there is no way of “using them up” and one can use multiple MKOs in parallel. We can then think of the PLE both as the biggest possible ZPD, or as the overlapping of different snapshots of a PLE that evolve “fractally”, multidirectionally, and on demand until they (potentially) cover the whole cyber landscape (Figure 2).

It is worth going back over our steps and revisiting my definition of the PLE. I believe that beyond a mere tool or strategy, the PLE is an evolution of the learning ecosystem itself, powered by the enormous potential of these new tools for knowledge management: ICTs, or, also, learning and knowledge technologies (Vivancos Martí, 2008). If we take into account a certain path of adoption of technology (appropriation of technology; adaption to existing processes; task improvement; and transformation of the way we do things), “being digital” is not considering virtual environments as an add-on, or a complement, or an alternative, not even yet another tool to drop into our toolbox. Being digital means always taking into account the virtual factor, in the same way that the PLE can be the starting point and the natural environment where the learner can develop her learning strategies. Being digital and working with a PLE is not about adding a digital layer, but about changing the paradigm of working and learning.

Figure 2 Personal learning environments and the revolution of Vygotsky's zone of proximal development



The future of educators?

One of the conclusions that one might infer from the previous statements is that they are proof of the postulates from thinkers like Seymour Papert, Roger Schank or Nicholas Negroponte: in a digital world, all one has to do is build a PLE as big as the biggest imaginable ZPD. It is about imagining all that one needs to learn, and finding out that it is already out there.

There is another approach, however. The PLE can be understood from a dynamic point-of-view: the PLE works well for one's life-long learning and corresponding ZPDs. What is required, though, is that PLEs are built to scaffold one's way through a specific ZPD. And, it is in this scaffolding that help is required. In other words, it is likely that we see a decreasing need for instructors as more knowledgeable others to learn what we need to know from, and an increasing need for instructors as more knowledgeable others to learn how to learn something. With personal learning environments to cover the ground of one's zone of personal development, learning how to learn or how to design one's own learning process may be more relevant than ever and require more help from third parties.

It is very likely that we are about to see a crisis of educational institutions, but not of educators, just as we are witnessing the crisis of newspapers along with a dire need for (true) journalism. Educational institutions are likely to face the pruning of some of their traditional functions, only to devote more effort and resources to the remaining ones – the ones that will still be adding value.

PLEs in the context of teaching institutions

I have stated that personal learning environments can be seen as a set of personal tools and strategies to regain control of one's own learning. But, they can also be seen as strategies aiming at transforming the private sphere of education. These are strategies that can be transported into the public sphere, breaking personal disjunctives to rethink education as a system as a whole, and not as a series of parts.

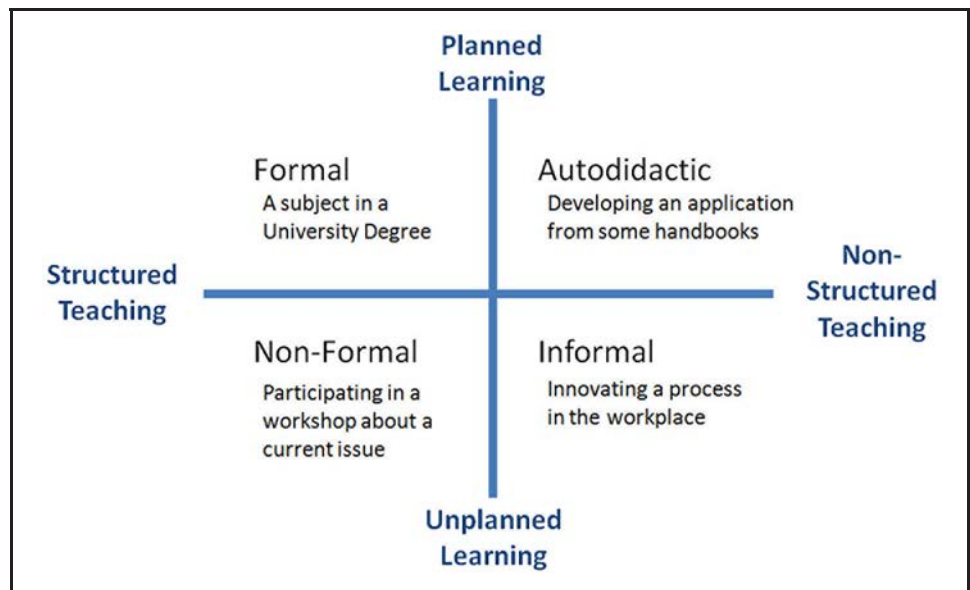
While the learner has some flexibility and leeway to swing towards the new philosophy of learning that the PLE implies, educational institutions usually experience more difficulty in walking through this change. There are, however, gaps in which to place the PLE as a wedge to open up new ways for teaching and learning, opening up the universe of the broader education system.

Structured teaching, unplanned learning

One of these gaps, and a quintessential one at that, is the increasing blurring between the barriers separating formal, non-formal, and informal education (Colley *et al.*, 2002; Smith, 2008) (Figure 3). If we take as one axis structured vs non-structured teaching and planned vs unplanned learning as the other, we can define the following scenarios or modes of learning/teaching:

- *Formal education.* The form of education which happens in the environment of an educational institution (e.g. a university) and with a planned learning design (e.g. the course, with its syllabus and its well-defined materials) that normally concludes with certification. Students usually aim for this certification, just like as they seek a structured plan for the achievement of a specific learning goal in formal education.
- *Non-formal education.* Occurs in an environment of institutional teaching, and also with a planned learning design. However, unlike formal education, students have not usually planned their learning processes so thoroughly, as they have not tied it to specific learning (or learning-related) goals mid to long term.
- *Informal education.* Typically lacking any formal structure (both in terms of lack of educational institutions leading or backing the progress and in terms of instructional design). It also takes place without any kind of planning by the learner, and real “learning” often happens just by chance.
- *Autodidactic education.* As informal education, autodidactic education occurs anywhere, outside any kind of educational institution or formal education structure. However, unlike informal education, it does feature the planning of learning goals and other goals related to it. In self-learning or autodidactic education there is full awareness of “wanting to learn,” unlike what it is found in informal education – it is worth noting, though, that self-learning does not necessarily mean solo-learning or learning with one-self.

Figure 3 Learning scenarios according to structure and planning



Within the boundaries (artificially) separating these different scenarios, the PLE has an important role to play: to provide the flexibility and freedom of action which, by their size and internal processes, educational institutions usually lack. It is when institutions are too big to reach certain specific learning targets (goals, communities, geographic areas) (Shirky, 2008) that the PLE can act as a bridge.

In other words, institutions were built to provide solutions within the boundaries of the different modes of learning: formal education through educational institutions; conference rooms, museums or libraries for non-formal education; workplaces for informal training; and, garages for autodidactic education. However, some online learning constructs – personal learning environments, massive open online courses, open educational resources, e-portfolios, social media and education 2.0 devices – are just perfect for working on the borders or the thresholds among the different modes and their respective institutions, or beyond them, transcending them – but not necessarily without them.

From formal learning to trans-learning

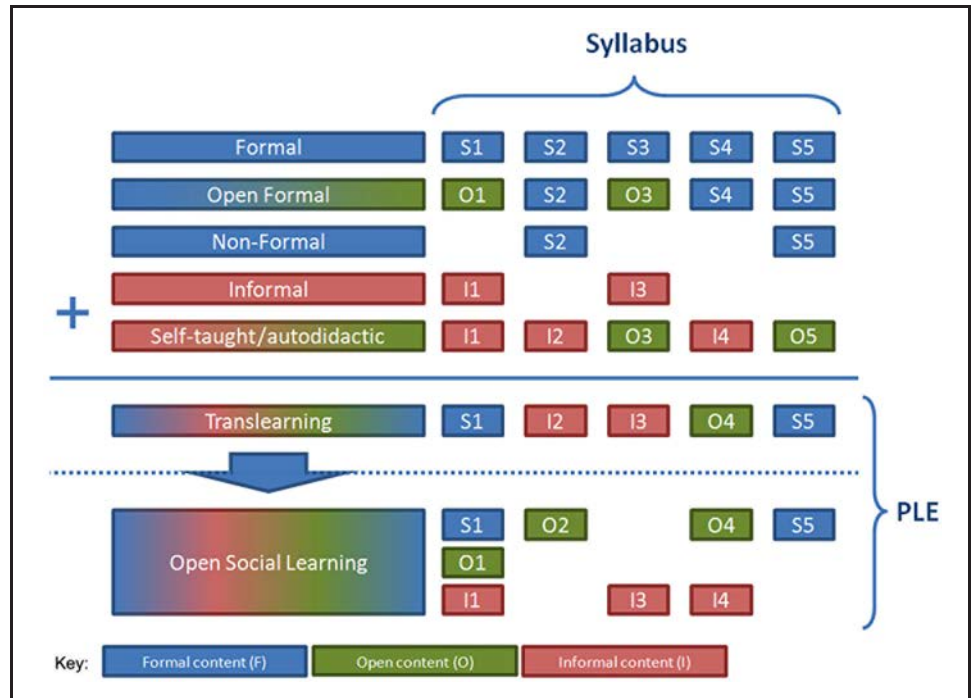
Judging from the various scenarios that we have drawn at the crossroads on structured education and unplanned learning, we can establish a kind of correspondence with learning resources – not necessarily explicit learning or teaching materials, not even pedagogical ones – as follows:

- Formal resources, which are faithful to the structure of instructional design of a training activity, often closed, both in substance – for they are closely linked to a structure and purpose largely immovable – as in their form: the resources are used only by educational institutions, and only educational institutions use these resources. In addition, resources are protected either physically or legally from being used in alternative contexts or from being used by third parties.
- Open resources, characterized by a certain internal structure that follows or emulates formal educational structures, but that have undergone a process of opening – in form but, above all, at their very core functions – by acquiring greater flexibility, including “mobile” or modularized parts that can be replaced or updated easily and with low costs. Open resources are also the ones that initially had no formal structure, but that, based on their use, have been incorporating structure to some extent. In other words, we can consider open resources materials used for formal education that have been opened in form and function, or materials that could be used freely for whatever purpose and that have ended up having a structure suitable as learning support.
- Finally, we find informal learning resources, which are all those that a learner can add to his or her own toolbox, even if they do not feature any explicit didactic structure and may lack a manifest purpose of being “educational” or do not facilitate the achievement of goal-based learning through them.

Figure 4 shows the use of learning resources according to the learning scenario in which a learner can be placed. In my example, a specific learning goal is set and then an educational institution develops a hypothetical syllabus made up of five learning resources. The resources are sequential, complementary, and complete. This is complete in the sense that the learner will cover the whole syllabus only by thoroughly going over them, and only by covering the whole syllabus can the learner achieve the initially defined learning goal or goals. This is the usual basic structure of formal education, with a set of learning resources that are applied in a structured and definitive (“formal”) plan.

The substitution of some of these learning resources by other open resources is almost immediate. This occurs more frequent as the reality in which the learning goal is framed changes at a quicker pace: if reality changes a lot and quite quickly, there is no time for the creation of substitutes for formal learning resources, and searching and identifying open ones becomes a practical solution. Of course, there are other factors related to economics, academic freedom, etc., that also foster the substitution of a formal resource by another one that, even if it retains an inner structure and similar functionalities, comes from an open environment, both in its form and in its philosophy.

Figure 4 Learning resources from formal education to open social learning



Following the structure I depicted in Figure 3 on learning scenarios according to structure and planning, non-formal learning maintains the structure of formal and open learning, but not its planning or its purpose. Hence the “blanks” appearing in the figure in comparison with formal education.

Likewise, informal learning keeps these very same “blanks” – it is not oriented towards specific learning goals – but the difference here with prior models is radical, as it incorporates learning resources that are normally alien to the world of formal education (tutorials, software manuals, expert websites, Web forums, etc.).

Lastly, the self-taught or autodidactic scenario recovers the goal-oriented structure and planning of formal education, but it feeds, by definition, on the resources of informality, including those that can be found in an open form and that fit the structure that the learner defined herself. It is interesting to see in this step towards formality an approximation that implies a hesitant, but purposeful, dilution of the border between formal and autodidactic learning emerges. The self-learner, consciously or unconsciously, aims at replicating part of what is happening within educational institutions, especially what refers to structure and results-oriented learning related to pre-set and well-planned goals.

The PLE, heavy switching and translearning

It could be said that the role of the personal learning environment, in its definition as a set of strategies and tools, succeeds in bridging two worlds traditionally separated from each other. As a strategy, the PLE links what is formal with what is autodidactic and what is institutional with what is not. In both cases, strategy is what prevails: the structure and design of the learning path with the objectives and goals to be achieved at its end. On the other hand, as a tool, the PLE transcends the scope of the structure, of the institution, bringing back into the learner’s learning the degrees of freedom that are so characteristic of informal spheres.

As they remain within the boundaries of the institution, the learner (and the teacher) can still feel that they have structure and planning. But now, and thanks to the PLE, both learners and

teachers can now begin to explore the territories of informal learning and self-learning. We call this walking outside the formal learning routes translearning, nomadic learning that crosses over different formats, media, platforms, formality and rigor levels in a corollary way that transmedia navigation consists of the “the ability to follow the flow of stories and information across multiple modalities” (Jenkins *et al.*, 2006).

Translearning, indeed, implies much more than the mere inclusion of informal learning resources in the classroom: it also means acknowledging that informal learning is also possible inside educational institutions or inside formal environments. Translearning is this the possibility that learning can be initiated in any environment (e.g. the classroom), but it can then be continued in any other environment (e.g. a library, a meeting with some peers, online games, on the train, etc.). Translearning implies, as a result, the possibility to separate the content from the container, the learning part from the teaching part, and the individual from the institution. As we have stated, this new learning reality necessarily forces educational institutions to think about how they add value to the process, and to differentiate the relevant functions they are performing from the ones that have become irrelevant. Educational institutions should not be blinded by inertia, by the ephemeral power of the certification monopoly, or by the even more ephemeral power of reputation, as these powers are being reshaped by the network of a knowmadic society that has come to stay.

Translearning can provide the same learning goals, but with much more freedom than now already outside both educational institutions and the structures laid down by these institutions. And despite the “syllabus,” it can be set *ex ante*. The inner structure does not unavoidably have to coincide with the syllabus of the formal environment – although, somehow, the learning goals, of course, should. And, it is in the setting of one’s own learning path that translearning can develop its full potential, placing the learner in the center of her own learning strategy, and giving her back most of the responsibility over their own learning options, if not all of it.

Translearning, conceptually placed in between “open education, the long tail, and learning 2.0” (Brown and Adler, 2008), does not enable so-called “multi-tasking,” but instead enables a quick, intensive and efficient way of switching between learning resources, environments and institutions, always fitting the place, the moment, the tasks and the goals of learning in the short-, medium- and long-run. Intensive, constant, heavy-switching of learning scenarios or modes is a function of the natural adaptation to an ever-changing reality.

Thus, translearning and heavy switching can be mapped as the vertical and horizontal ways of understanding how learning can happen outside educational institutions and formal structures by enabling different degrees of (in)formality along the learning path, and by enabling different sets of (in)formal educational resources on each and every step of the way.

Embedding translearning and heavy switching in institutions

If we take into account that personal learning environments and open resources for learning (not exactly the same as open educational resources) can be used by both the learner and the educator (distinguishable from just “teacher” or “lecturer,” as noted above), is there still room for schools and educational institutions in general? What place is left, if any, for the classroom?

With some perspective, it can be seen that ICTs have initially entered the educational system not with a transforming purpose, but just to, firstly, adapt some tasks that were already taking place; and, secondly, to improve the efficiency or efficacy in the performance of these tasks (Peña-López, 2010). The very first concept of the virtual campus was nothing more than the digitization of the traditional bricks-and-mortar classrooms and schools. We can speak of virtual learning environments (VLEs) as being more focused on the teaching part, or of learning management systems (LMSs) which are more focused on the managing part. But, both cases deal with the digitization of traditional practices. These, with time, have been the seeds of improvement processes and, in some cases, helped develop slight transformations of certain learning practices.

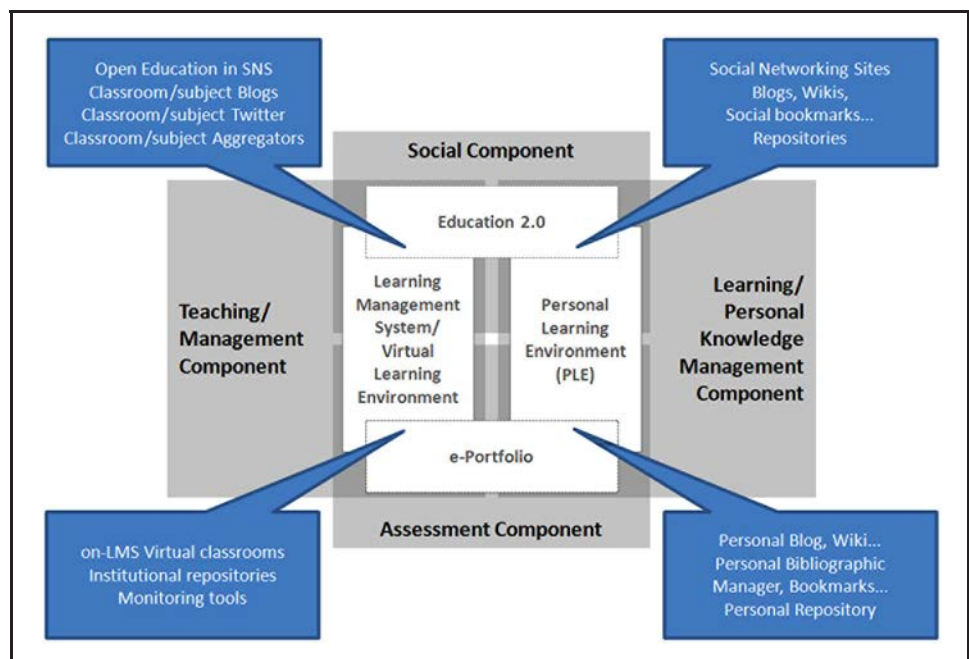
This transformation has usually been the consequence of two parallel evolutions. On the one hand, the evolution of competences and achievements-centered assessment through the utilization of new technologies, the portfolio becomes the e-portfolio (Attwell, 2007; Cohn and Hibbits, 2004; Lorenzo and Ittelson, 2005; Rossi *et al.*, 2006); and, with that, it embraces the new and powerful possibilities of digital tools. On the other hand, and in opposition to the concept of learning as something personal and individual, we are witnessing a renaissance of the social component within the classroom, boosted by collaborative learning technologies, and, above all, by everything surrounding what we usually call Education 2.0 (Anderson, 2007; Franklin and Van Harmelen, 2007; Peña-López *et al.*, 2006).

After the addition of the assessment component (e-portfolios) and the social component (Education 2.0) to the teaching and/or managing component (LMS/VLE), the personal learning environment comes to close the circle by adding the inevitable (but arguably forgotten) learning component (Figure 5). This learning component is closely linked with personal knowledge management, and its corresponding developments and competences (Pettenati *et al.*, 2009). In this form, the PLE appears not in opposition to the educational institution, but as a means to complement it where, by definition, it could not reach: in the informal and the strictly personal spheres.

If Web 2.0 opened the classroom and flipped teaching dynamics thanks to the inclusion of the community factor, the personal learning environment joins this community factor with what is personal, putting along a solution of continuity which is institutional, social and personal. The PLE is a unique way that the educator has to, through sharing her own readings, reflections and work, to get to the readings, reflections and works that students, themselves, will share in their own PLEs.

Moreover, if the e-Portfolio contributes to settle the syllabus in matters of competences through the assessment component, the PLE, again, joins it with everything related to personal achievement. Where the educational institution can provide a superstructure that puts order in teaching, the PLE provides – both to the learner and the educator (Peña-López, 2009) – an infrastructure that empowers them with the possibility to regain control of their own learning and teaching processes.

Figure 5 Heavy switchers in translearning: closing the circle of ICTs in education



Translearning and heavy-switching, enabled by the addition of the PLE to the circle of ICTs in education, provide a unique opportunity to re-envision educational institutions as well as the concept of education, itself. It may very well be that MOOCs (especially cMOOCs, as described by Fini, 2009), even if still in their early years, are the first manifestations of this new learning paradigm. Translearning and heavy-switching imply, above all, distributing the responsibility of the design of the learning path to students themselves, as individuals and as well as a collective, that the responsibility that used to rest on institutions now is shifting toward the rest of society. This society, also present in the learning sphere by means of the students' and the teachers' PLEs – whether they are called this way or not – is the one that will help in visualizing what, with all certainty, already is a reality, even if many times it appears invisible (Cobo Romani and Moravec, 2011): learning does not only happen in educational institutions, and that learning does not only happen in a specific stage of life. Learning happens all the time, and translearning and heavy-switching enable us to recognize and leverage it in powerful ways.

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