

# ELEARNING 2.0 – HOW CAN HIGHER EDUCATION BENEFIT FROM WEB 2.0?

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## **Abstract**

The quality of education, and the resulting employability, of a person is closely linked with their ability to identify, name and solve problems. This ability, in the era of ICT is undergoing revolutionary change. It newly correlates with activities connected with the ability to communicate and to be familiar with the electronic representations of your knowledge. This reality necessarily influences the process of education, not excluding college education.

The tools of Web 2.0, such as Wikis, Weblogs, software for social networking, media portals and so on, offer a diverse opportunity for learning. But it takes effort to personalize these freely accessible tools, choose among them and organize entries to their services. Today, only gradually are we able (and willing!) to use the only imagined potential of the internet.

The paper discusses examples of university education based on the process of creating Personal Learning Environments (PLEs). Students play the role of active self-directing creators of the course's content. The teacher, other students and the external virtual environment provide the "only" stimuli for the creation of these PLEs.

PLEs are created by students, as a result of the processes of their studies, with support from the learning community organized in a network fashion. Web pages and services in which and with the help of students are able to produce content and store documentation of their process of learning, are created – for themselves and for other members of the learning community. An unlimited "bazaar" of information is created and generates a mishmash of instruments and outputs, upon which the students can reflect and which aids in their learning.

To enhance the value and employability of graduates in a turbulent and rapidly changing society, their meta-cognitive abilities must be developed. This online course accepts the need for the development of skills known as transferable skills, such as communication, decision making, team work, problem solving and others.

A collaborative approach based on communication, decision making and other skills is presented in this approach underlining collective creation of Team Learning Environments, (TLEs) where the knowledge of team members is aggregated with the use of their PLEs. The obtained knowledge is put in to new contents and they use a network structure of feedback. The final result of the student activities of the presented course is the creation of the Course Learning Environment, which aggregates the previously personally created PLEs into the TLE, and together with them, becomes an integral part of a dynamically structured content of online course of the studied subject. But the output is not only an aggregation of PLEs, TLEs, and CLE but the process of its creation itself.

**Keywords** - Education innovation, information and communication technology, research projects, Web 2.0, social software, wiki, Personal Learning Environment, collaboration, networking, connectivism, Virtual Learning Environment.

## **1 INTRODUCTION**

Changes, which information and communication technologies (ICT) bring, are so revolutionary that a 'new model' is sought in many scientific disciplines. Also, in the field of education there are calls for a diversion from an authoritative education model controlled by the teacher to processes of metalearning and to a model based on an ability to learn.

The underlying trend is clear: technologies and ease of use for making people connect and communicate is highly appealing. However, are we able to take and use these tools to step over deep-

rooted standards and to pursue activities in a different way than before? It is only possible in cases where we step out of the box represented by a model of "a classroom and textbook". Without understanding the limitations of this box's walls, we will only search for electronic analogies of current principles in the sense of a never-ending improvement of the model that has already been superseded.

It is time to accept that Learning Management Systems are, by their nature, predetermined only to replicate the old mental model of education. Authentic Learning in this era of ICT requires a new model, thereby, making it possible to overcome the centuries-old paradigm, which now stands in the way of achieving revolutionary changes in education.

This article describes the practical realization of a model with students at the center of activities in an online graduate studies course and discusses and describes the use of Web 2.0 and its goal oriented services in a university education model, namely the utility of wikis, as a resource for achieving these objectives. Sharing of space and time is being replaced by sharing of thoughts. Students are designing their Personal Learning Environments (PLEs), e.g. they are co-creating current course content. The teacher relinquishes his place at the center to his students. The nature of their knowledge has changed, from categorization and hierarchies to networks and the networks' creation are the fundamental principles for their learning. Students' (and teacher's as well) knowledge is going to be dynamic and multi-faceted.

## **2 NETWORKED LEARNING**

At the Faculty of Economics VSB - Technical University (forward on EkF VSB-TU), an online course of studied subject, one semester long to support present classes was established (for students EkF VSB.TUO) and at the same time is occurred as distance learning (for students on Faculty of Informatics partner University Hradec Kralove (forward on FI UHK). Both faculties were two hundred kilometers apart, students never met personally and until now they did not know each other even virtually.

The online course *Communication skills in virtual environments* is accessible in the Czech language ("Komunikační dovednosti ve virtuálním prostředí" is necessary to paste to the "Search") at <http://virtuniv.eu>.

### **2.1 Communication**

VSB-TUO students meet face to face (F2F) in a classroom with their teacher and also among themselves 2+2 hours weekly for a length of one semester. The Students at UHK undergo an online entrance tutorial in a classroom in Hradec Králové, at which the teacher and students from Ostrava are also present at the same time in Ostrava. Synchronous broadcast of word and picture and simultaneous computer working service with use of DimDim technology is executed. At the same time the communication is recorded for repeated Internet access by students (Mediasite, Merlingo, approximately 30 sec. delay.) The midterm tutorial is organized in the same way and its goal is reinforcement of used working methods.

The main burden of communication with the students from UHK is not on the educator, but it is force on the students of Ostrava. Communication is started by the introduction of each other to still unknown classmates. Together they are obligated to work on their team term assignments, where each team is created from students from both universities. The need for communication is obvious, and is not driven by the educator but by the common students' goal. It is essential to communicate so the UHK students would produce the required part of the teamwork. Not even the students of this course want to do work of others, that is why they communicate – to the delight of educators and for the own benefit.

The communication, during the whole term, culminates during the final tutorial, where mixed students teams physically present at two geographically separated places, together defend their team term papers in front of their classmates and educator. All team players, including non-team listeners, take turns in entries into a synchronous broadcast (DimDim) with recording for later Internet access (Merlingo, Mediasite.)

An intricate communication net is reinforced by the established work method with the students in the center of the activity. Part of the teamwork are reciprocal tasks assigned by each team for the other, fulfillment of these tasks, their hand in, which is achieved by their placement on their PLEs, TLEs, and

even their mutual criticism and provided feedback. Research into the field of online education often shows that virtual communication is not at the desired level, in that students do not access prepared forums etc. In this course, the opposite is true. Communication is vitally important for the desired results and develops naturally into unexpected dimensions. Students spend together an unexpected amount of time, create together, fulfill assignments, and give feedback on them.

## **2.2 Learning is the process of creating network**

Students get into totally new situations. They can see that the work cannot be formal, that the used methods do not let them circumvent the fact of their mutual dependence to obtain their goals. From the very first hours, students communicate among themselves intensively, and also as described below, mainly they produce together.

The turning-point in student activity is the situation when they realize they were losing control over their information flows. The dependence on mutual communication is new for students from the beginning the term. What is new in this phase is lost of control over an exponentially growing net of communication channels and resulting objects. Objects are the students themselves, the teacher, anything and anywhere in the virtual environment, further new and new sources of information and flows of information between them. The net is beyond the capacity of comprehension; they are starting to be surprised, but at the same time they are unusually productive. The teacher is jubilant and the students are motivated by the fact that there is something new behind every corner, until now unexplored, unabsorbed and something that could be handy at their act of creation. Learning is happening very intensely – to the point that the fact of excessive amounts of stress appears in final evaluation, as a negative part of newly established methods.

Beside their jubilation, the teacher has a dilemma. He is also losing control over all the learning. He has to develop new approaches for evaluating the students. He was the one who chose this route: presented the challenge to the students.

## **2.3 The hierarchical structure is replaced with a network**

Each of the participants is going through his own hell brought on by the Internet. For years, we were used to having control over our learning. Our thinking was determined by a hierarchical structure of instruction. The network structure of information is not static, but gives the individuals and whole community the ability to comprehend them – a feat unattainable using the old methods.

## **2.4 Reality of Online study course**

It is not easy for anybody to submit to change from a hierarchical structure to a network structure. It is not easy to accept for bankers, salesman, all students, and educators, as well as that the knowledge is henceforward not seen as “product, something that is static, hard and organized and defined by experts”, Siemens (2006).

Students loose the certainty that they are going to be successful. The classical regurgitation of information, maybe knowledge, would be simpler, but they instinctively know that is not possible in this course. Students are faced with the reality that the responsibility for their knowledge is transferred to them. The goal is not to show that “I know” but “to know.” To know and to be able to – in spite of all that is mentioned – to organize their knowledge so it can be found, eventually newly acquired, in a time of need to solve actual problems in the workplace.

The educator presents students with challenges, not with exactly given problems with sharply defined goals. Challenges are only supposed to evoke particular situations of their future practical life. Fulfillment of these challenges is difficult to control. Traditional evaluation tools fail, but the educator has still to be able to evaluate students and to give or to not give credits. Part of this responsibility transfers to the team leader, but also to each member of the network. Even this burden is not easy to accept.

## **2.5 Knowledge can be organized in a conceptual framework only**

It is not easy for any organization or individual to implement the reality of the digital age previously described Castells (1996): “Networks are the fundamental stuff of which new organisations are and will be made.” The Rise of the Network Society – powered now by the Internet – brings to society the shift from hierarchies to networks.

It is possible to summarize that it does not apply anymore that the flow of knowledge is one way, for example from author to reader-learner. It is no longer a linear pathway. Network – the web is created by the many for the many: multiple authors, multiple pathway, Siemens (2006). Continual connections change content permanently (see connectivism as a learning theory, Stephen Downes etc.).

Knowledge can be organized in a conceptual framework only. This reality changes the position of each participant in education, even the position in a classroom. It does not happen naturally, nor even without pain. Everybody only gradually accepts the inevitability to bring networks to the workplace that have extraordinary advantages as organizing tools because of their inherent flexibility and adaptability, critical features in order to survive in a fast-changing environment, Castells (2001).

### **3 CREATING (PERSONAL) LEARNING ENVIRONMENTS – CONNECTIVISM**

Under the weight of the reality of the Internet, course participants start to accept that the meaning of “knowing” has shifted from being able to remember and repeat information to being able to find and use it, National Academy Press (2000). They panic, thinking they will not be able to “find and use” what they need in the chaotic net. Only reluctantly, they accept the network as a partner, to whom they can transfer the administering of knowledge. They are starting to appreciate the importance of the skills associated with it.

During the course, new teaching methods, based on the strategy of the active creation of a course syllabus done by the student in the network environment, are applied. The online course is created during its duration, where the organization of its processes is led by the educator on wiki pages. The social software tools of Web 2.0 are used. The output is user generated learning environments. During the entirety of the course, each student generates his Personal Learning Environment (PLE). PLE are Web sites or services where learners are able to produce learning content or reflection and store documentations about their learning processes, Schaffert, Hilzensauer (2008).

At the beginning of the semester, students start to build their blogs with enthusiasm, which documents their continuous journey of discovery. Immediately after, they are forced to become familiar with the working of wiki, and gradually, they come to appreciate the possibilities of this technology for the type of work, which is demanded of them, which is for active team creative work on the internet.

Students, often for the first time, leave evidence of their presence on the web – they produce. Often they do not recognize the usefulness of the created environment for their further goals, even beyond the frame of this one subject.

#### **3.1 The PLE holds the student’s knowledge in a holistic manner**

Personal space is becoming, for the student, a space from which he can organize his acquired knowledge, skills and his views. He is deciding which of them are becoming important for assessing and applying and for solving practical problems. The work on the student’s PLE, which was started in this course, exceeds the time and location framework of its creation. The PLE is used and modified by the students even after the end of the herein described course. Management of their PLE becomes an integral part of their further studies.

Holistic connections spanning various subjects are created naturally. A student’s PLE gradually concentrates everything that he in the past carried in his briefcase, what he had in the bookcase above his bed, but also the outputs of libraries anywhere in the world, the information and advice from his teachers of various courses and even the information, knowledge and even often skills presented anywhere on the internet. From them, the student chooses the ones, which are in the given moment, relevant for him, he then correlates them with his needs and includes them in the context of his PLE – virtually, but at the same time – unaware – also in his physical conscious. He is learning.

The student, during the presented course, is given the space to proceed the same way as during scientific research with all its steps: collect – relate – create – donate (Fig. 1).

The student is encouraged with guidance from his surroundings, which include the teacher (a), to search for relative sources (collect) to (b) put them into the context of his present real task (relate), to (c) shape (create) his previous knowledge and skills by supplementing them with new information and by responding to new challenges and to use new information and communication technologies to communicate his output and receive reactions to them (donate)!

The student's work, which is required to fill the space designated by the teacher, in the described course is based on having (a) at his disposal a deep foundation of factual knowledge, (b) understand facts and ideas in the context of a conceptual framework, and (c) organize knowledge in ways that facilitate retrieval and application, National Academy Press (2000). The teacher's task is to motivate students sufficiently really to enter and stay in this unique space, which corresponds with the needs of the internet society.

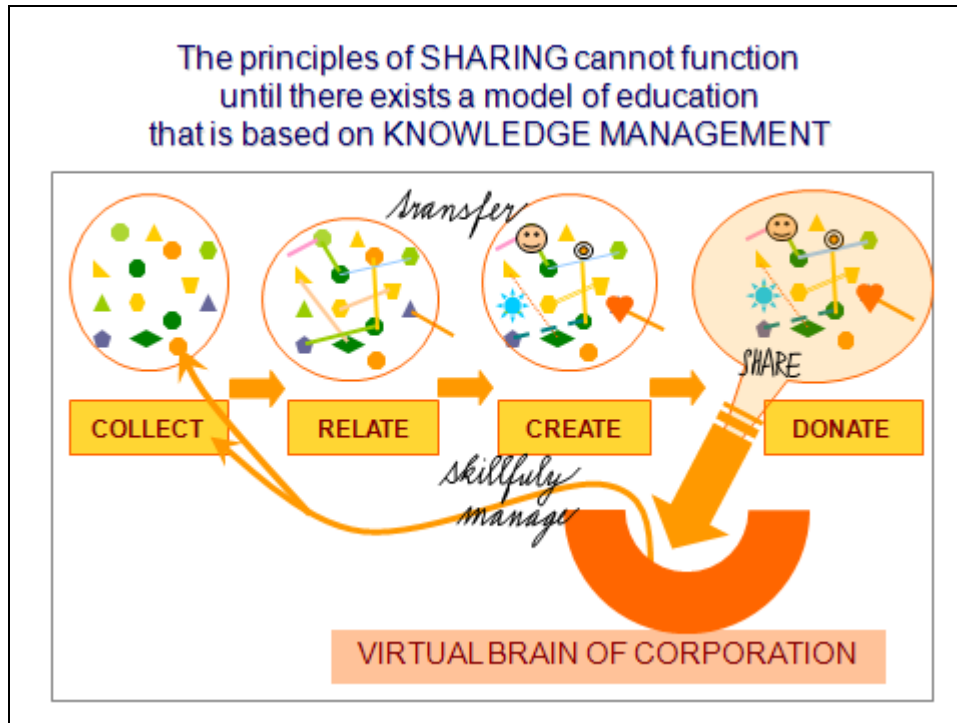


Fig. 1. Harnessing collective intelligence

### 3.2 Trusting users as co-developers alias The journey from PLE to the “TLE” and “CLE” spaces

In this course, the ability to work in teams is simultaneously developed. The goal is to use a synergistic effect to acquire competencies (Fig. 2). Online course is commenced on wiki page <http://virtuniv.eu> (Fig.3).

#### A. Team Learning Environment (TLE)

In this course, the educator leads his students to team work. The students, consequently and in a spiral fashion, are returning as a team to the themes, which at the beginning, they explored as individuals. They evaluate their classmates' approaches, collect new stimuli, select the best, and search for common context, which suits them all the best. Much more than at the beginning, they chose to work on the wiki, they are creating additional internet “nuggets” for their learning environment with the use of web-based applications, Google, YouTube, Flickr, Facebook, Audacity, Del.icio.us and soon, in a spiral fashion, they are returning to the known, adding new views, shaping, sorting, systemizing and at the team level they increase the quality of their knowledge. The imprint on the web, which the team creates, is called a Team Learning Environment (TLE).

Later the educator leads the students to a mutual interaction between team territories. One team thinks of tasks in a given theme for their classmates on the other team. In general, only someone, who already knows a lot about the theme, is able to find and formulate a task, which would further develop required skills. The task assigning team further improves its knowledge, while evaluating the other team's output. This is all happening in cyberspace, to which everyone has access, synergy functions and a still higher quality of knowledge is being achieved.

Teamwork strengthens collective intelligence; it shares outputs. The phases of creation, relating, and approach to a newly conceptualized content of the course cyclically repeat themselves. To relate, students and educators, do not use only the principles, which are typical of the Learning Management

Systems, such as Moodle, which is a relating of knowledge by way of repositories. Much more effective learning is now achieved with the use of social software and internet aggregates.

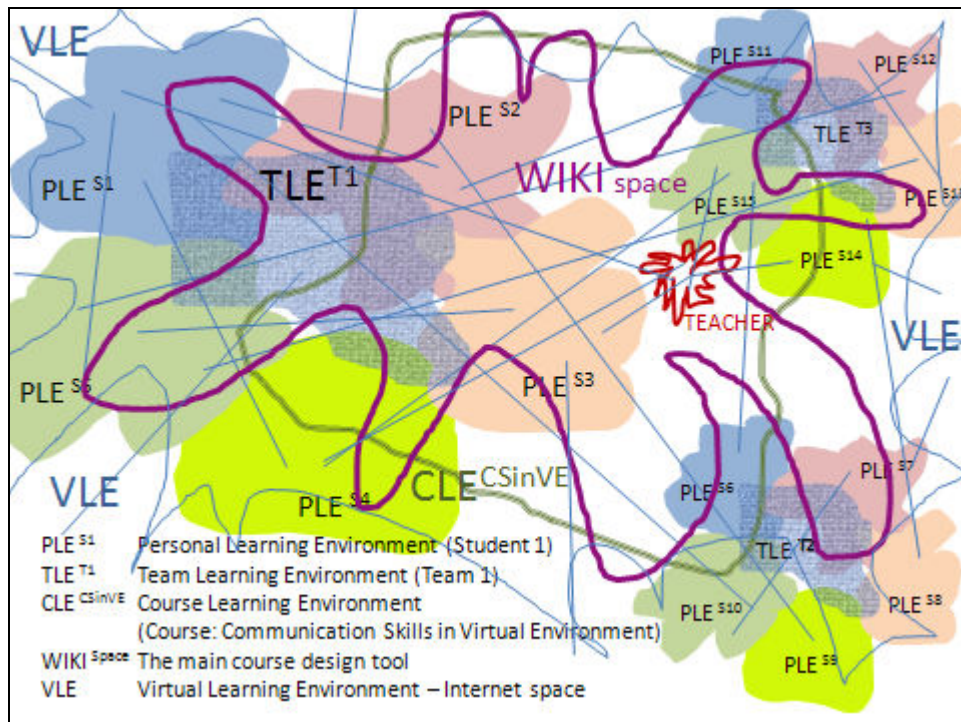


Fig. 2.: Web-based designed course MushUp: PLE, TLE, CLE, VLE is cross connected mostly on wiki.

It can be useful to mention the obstacle, which arose in active teamwork. Students had mutual concerns about their performance and they often did not trust each other. It is not easy for them to depend on and trust their classmates or that their collective output, which will guarantee the obtaining of credit, will be finished on time and with high quality. Individuals would sometimes even choose to work in the place of others, but the educator is firm, and requires and evaluates the quality of the teamwork, not the individual performances. Mutual trust is necessarily becoming a reality.

Kategorie: [diskuse](#) [ukázat zdroj](#) [historie](#)

**Kategorie: Komunikační dovednosti ve virtuálním prostředí**

Online kurz studijního předmětu Komunikační dovednosti ve virtuálním prostředí

**Obsah [skrýt]**

- Hlavní metadata předmětu
- Popis kurzu
- Po úspěšném a aktivním absolvování předmětu
- Výstup kurzu jako doklad procesu UČENÍ SE
- SEZNAM všech článků kategorie, tj. studijního předmětu KDveVP 2008/09

**Hlavní metadata předmětu**

Poskytovatel: Institut inovace vzdělávání @ Ekonomická fakulta @, Vysoká škola báňská - Technická univerzita, OSTRAVA

- Identifikační kód: 167 303, Prezenční forma studia s modifikací distanční pro partnerskou univerzitu
- Garant předmětu: Danuše BAUEROVÁ
- Výstup: 4 kredity
- Doba realizace: LS akademického roku 2008/2009, tj. leden 2009 - duben 2009

**Popis kurzu**

Tvůrčí osvojení si látky prezenční formou s podporou Internetem a pod osobním vedením vyučujícím.

Metody práce uplatňované v kurzu se co nejvíce přibližují současnému pojetí vzdělávání se, kde se stírá výlučná role pedagoga a posiluje se význam vzájemného DIALOGU. Studenti mají velký vliv na konečnou podobu kurzu, neboť ta spočívá zejména ve kvalitě spolupráce a sdílení, jež je v kurzu vedeno rovnocenně všemi jeho účastníky.

Důraz je kladen na kolaborativní formy práce s vyústěním v týmové semestrální práci.

Práce v online kurzu studijního předmětu KDveVP (a na online kurzu, rozuměj na jeho tvorbě) podporuje tzv. transverzální dovednosti, tj. dovednosti překračující meze oborů. Patří jsem sociální schopnosti vč. komunikačních, dovedností pro týmovou práci a práci v multikulturním prostředí. U každého studenta je rozvíjen velký potenciál vlastního odborného a osobnostního růstu, např. ochota se kontinuálně vzdělávat.

**Po úspěšném a aktivním absolvování předmětu**

Budete UMĚT:

- Orientovat se ve struktuře komunikačních nástrojů ve virtuálním prostředí, včetně vybraných přístupů ve web 2.0, třídít je dle vybraných kritérií, pohlízet na oblast komunikace systematicky.
- Vybrat vhodný komunikační nástroj a komunikovat efektivně dle dané potřeby.
- Získávat nejnovější, zpravidla ty nej kvalitnější zdroje ve své oblasti prostřednictvím tématických fór světové komunity a jiných zdrojů a možnost aktivně se do nich zapojovat.

Budete SCHOPNI:

Fig. 3.: Online course is commenced on wiki page <http://virtuniv.eu>.

## **B. Course Learning Environment**

Collective knowledge is clustered further, viewed from different angles, considering other approaches. The development of the Course Learning Environment (CLE) can be called a harvest of the work of the whole semester. Students, together with the educator, create a certain display, which is created by the aggregation in a spiral fashion of the developing efforts of the individuals and the teams.

The content of the course reaches large dimensions and it would be difficult for the individual (educator) to administrate. The whole team of the study course took over the control of the new unique sources, which are difficult to keep up to date. The idea that sources of information and knowledge become richer with wider use, culminate as a principle. Tentacles of knowledge reach with higher intensity into unusual corners. The probability is higher that less known, but often more importantly, higher quality information, from the process known as long tail, enters into play.

## **C. Learning Environments as learning process outcomes**

The metacognitive approach to instruction that can help students take control of their own learning by defining learning goals and monitoring their progress in achieving them is realized in all the intertwined planes of the creation of the PLEs, TLEs and CLEs, National Academy Press (2000). At the same time, the main goal of education today: helping students develop their intellectual tools and learning strategies needed to acquire the knowledge that allows people to think productively is fulfilled National Academy Press (2000).

The achieved results of the studied course confirm that “the learning environment is an (if not “the” important outcome of a learning process, not just a stage to perform a “learning play”, Wild, Modritscher, Sigurdarson (2008).

## **4 LIFELONG LEARNING (LLL) AND EMPLOYABILITY**

In education in the digital era, the target objective areas (holistic approach), as well as the methods, by which we achieve them, shift from a formal to an informal type of education. The term Lifelong Learning is fulfilled differently now than it was before the inception of the internet. In the past, the taking of supplemental courses (mostly on Friday nights and Saturdays) was understood as LLL. Now, LLL means the continuous process of learning, independent of time and space. Responsibilities shift to the individual.

In the presented course, education is understood as a process, part of which is the increasing of the ability to learn. While the goal, in the past, was learning about things (the bodies of knowledge), today, that is in the presence of ICT, the goal is learning how to learn about those things. Students learn the skill to know where and know who rather than to know what and know how. Classical knowledge is a part of the education, but so are metacognitive abilities, such as the ability to communicate, to make decisions, to choose independently strategies for learning, to build social contacts and to create interest societies. Naturally, transferable competencies, which can be used later in one’s professional life, as well as in one’s private life, increase.

As long as a social education is conducted so the teacher does not supply completed knowledge and instructions of what to do, but issues challenges and opportunities – motivation, it is reasonable to expect the individual, even after leaving school, will be able independently to discover challenges to be a source of his consequent adaptability. If during the school years, the center of the activities is not controlling, but fostering and guiding, we can be sure that the individual will be adequately prepared to take responsibility for his own further learning. Only in this way are we bringing to life real Lifelong Learning (LLL), which is suitable for a turbulently developing society.

The ability to create one’s own PLE is very useful for lifelong learning and employability support. A self-motivated approach to one’s own active systematic learning creates an environment known as a sustainable development of competencies, Schaffert, Hilzensauer (2008). The ability to create one’s own PLE supports the ability to be adaptable. And to be adaptive is to be perpetually current.

## **5 CONCLUSION**

The purpose of this paper was to show how students obtain a broad space for performing the activities during which they learn. Such learning happens under systematic authority management – it leads to improving students’ motivation – by accepting and using influences of a wide spectrum of net participants.

Students design their virtual Personal Learning Environments (PLEs), in which they collect their study materials, connect them together into a new context and try to find their meaning. By doing these activities students learn.

At the same time, students work in teams in the Team Learning Environment (TLE), where they create relations between the different points of view of their schoolmates, use knowledge acquired while designing the PLEs and optimize their cross-site working partnerships and learning process productivity.

The SPIRAL model of knowledge acquisition by people (returning to the same area under different conditions) is realized in the wide net of connections and in the presented course culmination of the work in the Course Learning Environment (CLE). Here all challenges are concentrated and accomplished by the new views from the work of teams (TLEs) and individuals (PLEs). The significant part of the learning process is spreading feedback through the net already connecting the students. The obtained output, which is the mutual evaluation added by self-reflection, is being used as a base for the final evaluation made by the educator.

The heart of the changes includes a divergence from a linearly coordinated system with teacher in the middle, i.e. from all the participants only the teacher leads the process, towards a network structure of roles and outputs. Activities are newly developed by all participants according to students' needs, and with the goal of supporting their work and their learning.

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