Technology Powered Learning at Academic Institutions

Personal Credit Portfolio

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Abstract—**This article aims to describe the methodology for the realization of particular although partial steps when accepting a new paradigm of learning or other school processes. A part of the paper deals with the verification of partial methodologies of the Model of Technology Powered Learning at school. The student-centric approach and the impact of information and communication technologies on education and university society are applied. Positive digital identity of personality is an outcome of human activity while at the same time it accepts the technology of cloud computing and deep web. A new term – *Personal Credit Portfolio* – has been invented. The processes are implementable for students and for all the members of academic staff, and consequently have an impact on the credit of the whole – University.**

Keywords-Personal Learning Portfolio; Personal Credit Portfolio; Technology Powered Learning; Social Web; Internet-based Education

I. INTRODUCTION

Many research programs explored how new technology brings mass collaboration and changes the world. For example, New Paradigm team [1] has conducted several investigations to understand how the Web 2.0 changes the corporation. Collaboration and relationship has been newly shifted to the new paradigm principles.

A. Contextualization and Importance of the Theme

Web 2.0 tools do not only provide different ways of communication which should enhance learning and interaction in the virtual environment. They also offer a real opportunity to create a classroom without walls [2]. Boyd [3] claims that the social aspects of Web 2.0 have great potential for enhancing education, while many authors suggest that Web 2.0 concepts could support lifelong learning communities. The teachers´ role is to encourage eLearners to creative thinking and to stimulate them to be active users (i.e., prosumers) [4].

Learning through ePortfolio is offen offered. Hellen Barret describes Balancing the Two Faces of ePortfolios [5] and separates the process of creation (Portfolio as Workspace) and the process of final display of the product (Portfolio as Showcase). By this approach the process of positive digital identity building is solved only partially. In this article, a proposal of good personality image building by a so called Personal Credit Portfolio (PCP) is newly formulated. For the process of the PCP creation is significant continuous interaction of personalities and technologies.

Links are the new CVs, portfolios aren't just for artists anymore, and experience reigns. The most important skill we'll have in a world where 50% of people see self-employment as more secure than having a full-time job is the ability to go out and get the right knowledge for the right purpose at the right time [6].

The academic exclusivity has for centuries been based on the strictly hierarchical structure of the processes. The evaluation of students, pedagogues and scientific staff is a direct outcome of academic activities. Being closed in is the means of building exclusivity. The role of the so-called gatekeepers is integrated within the system, and the openness and sharing create strong concerns. As it can be generally seen, nowadays numerous methodologies of hierarchic evaluation of academic institutions and their individual members are being introduced.

Hierarchic teams at universities are not very efficient. The open web environment with its flat net structure of the processes with natural activities of end participants offers more. Openness and sharing are not typical of teams within universities and thus the effective connection to the outside world based on the continuous feedback is missing. There is still a tendency to adhere to publishing the results of pre-reviewed scientific research which does not correspond to the speed of development. The natural characteristics of the open web environment concerning the criteria of the evaluation with continuous feedback are missing. Any growth is thus supported with intolerable delay.

The openness of the Internet is a threat. Especially worried are those whose outputs are not shared and naturally used by professionals. It is not always academics who refuse changes; sometimes the same can be said about students. The newly created net connection brings development but also the necessity of continuous work. However, students are not always willing to make an effort because it is the evaluation which is considered the main product of their work not the real personality development. Some students admit that they are studying only to get a degree. Continuous shared

collaborative work, for which the activity of each member is a necessity, seems to be a useless complication on their way towards a degree. In this way, the core of the interest lies not in the real personal development but in the achievement of an academic title.

The theme is important and relevant as a fight for survival of a hierarchic structure against the danger of the flattening of the world by net structure is a strong characteristic of the present academic life. New paradigms cause disruption and uncertainty, even calamity, and are nearly always received with coolness, hostility, or worse. Vested interests fight against the change, and leaders of the old are often the last to embrace the new. Consequently, a paradigm shift typically causes a crisis of leadership [7].

The openness of the Internet is a threat for the hierarchic structure and as a consequence it leads to the refusal of new technologies by those whose good reputation (credit) is supported by the hierarchic evaluation. Pundit Andrew Keen issues a long bleat claiming that the world is awash with drivel because it is so easy to propagate ideas on the Internet. Keen pines for the good old days—a time when apparently only smart and credible people had access to printing presses and the airwaves. A healthy society needs gatekeepers, he argues.

Throughout history academic institutions have organized themselves according to strict hierarchical systems of authority. At the time of the Internet it does not seem to be effective to report on the strength of an individual or an academic institution through various hierarchical systems of evaluation. Today, you advance in the world based on your performance, not a piece of paper declaring your expertise in "knowing a little about a lot of things" [6]. The good reputation (credit) of universities, individual students, pedagogues, and scientists could be developed through openness. Sharing outputs brings along a natural evaluation of quality. The flattening of the evaluation processes towards the net structure with active participation of end users is beneficial.

Individuals and institutions reject these changes. No clear examples of such change implementation have been observed in the surrounding environment. There has not been a methodology put into practice yet.

B. Research question and Objectives

This article aims to describe the methodology for the realization of particular although partial steps when accepting a new paradigm of learning or other school processes. A part of the paper deals with the verification of partial methodologies of the Model of Technology Powered Learning at school. Is the end-user approach applicable on education and university society? Would a Positive Digital Identity of personality be an outcome of human activity and the technology of cloud computing and deep web at the same time? How can end-users contribute to their personal identity (whether they are students, pedagogues or scientists) and further to identity and prestige development of the whole institution within the process? Are the students able to create systematically their Personal Learning Portfolios and

perceive a power of these outputs when creating their digital identity? Could be realized processes generalized?

The aim is to use the results of long term qualitative and quantitative analysis to formulize generally valid methodology. The outputs are monitored when transferring them from Learning Management System usage to freely accessible web applications. The subject of interest a monitoring of implementation effects of Technology Powered Learning is. The research is in process when educating thousands of students of academic institution within more than 10 years. The outputs are generalized in proposed methodology to be transferred to Technology Powered Learning Model.

A new term – *Personal Credit Portfolio* – has been invented.

C. Structure of the Paper

In the introduction the context and rationale of using different Web 2.0 tools in teaching and learning are mentioned.

Section II presents the results of examples study. Facts and methodologies of successful world universities are reminded; these universities use an openness and power of Internet more effectively than universities in the Central Europe do. Section is involved to strengthen previous argumentations in favor of research, hypotheses formulation and methodology of innovations implementations to the environment of the Central Europe universities.

Section III involves the results of research being provided at the university to argumentation for the change and proposes the procedures. Here the results of long term research in usage of Learning Management System (LMS) Moodle to support academic education are stated. Methodology of the transition from LMS Moodle to the open access web applications and creation of Personal Learning Networks is described. The way of using the power of social networking when implementing the model of Learning Powered by Technology is shown.

Section IV brings new knowledge and implements a new term. It is linked to previous contributions, which separate two parts of ePortfolio creation – one as the process and second one as the product. The new implemented term Personal Credit Portfolio points out inseparability of both parts. Building of positive identity is presented as continual process. Participants here is not only the man but hidden technology processes as well. Experiences are used accepting the fact that Every work starts with the potential to be a Thought Paper that might be read by millions. I am responsible for building my resume or portfolio since my first day in college. [8].

The final section presents a concluding discussion of the findings of the study and university reality from different angels. The pros and cons of different Web 2.0 tools at universities and the synergy effects of the integration of the selected tools to university processes are also examined. Discussion about the future direction of the Web 2.0 application at the university environment is open.

II. SUCCESSFUL UNIVERSITIES ARE UNIQUE BY THEIR OPENNESS

Universities as well as their academics strive for the best in their field. The danger consists in persuading ourselves that we can get among the successful ones through the currently used methods of evaluation. The winners are those who can accept the fact that there is no need to develop the processes and criteria applicable in the times before the Internet. The challenge of today's world is to overcome the existing paradigm in the most direct way. The focus of the new evaluation methodology lies in openness and sharing, which leads to a natural evaluation based on relevant feedback.

Openness and sharing demonstrably increase the effectiveness of the present processes. Academic processes are no exception. Openness and sharing are what increases the personal and the academic institutions´ credit, and as such they are necessary to be included among the relevant evaluation criteria. The growth of the credit refers to:

- student´s, graduate's and teacher´s personalities but only in case that it is the "learning" not the "testing" which forms the center of the pedagogical processes (personality´s credit is built on continuous learning not on evaluation by testing),
- research and science workers but only if the Internet is used for the open scientific cooperation with shared outputs and for continuous feedback,
- administrative workers but only if the Internet is used for the shared collection and continuous generating of customized data needed for academic processes,
- institutions consisting of students, graduates, pedagogues, and scientific and administrative staff who have relevant knowledge and who use the current power of the Internet as described above.

III. SOCIAL NETWORKING AND THE MODEL OF LEARNING POWERED BY TECHNOLOGY

The present state of eLearning at the Central European universities is based mostly on the pre-internet time processes. Old processes are only performed with new technology usage but they are not powered by technology.

The power of new Internet Web 2.0 is not fully utilized, even though there has been positive feedback from end users/students. The focus of the present approach is a pedagogue not the social networking of learners. So far there are not accepted activities and processes of the Model of learning powered by technology.

A. Out of the classroom, out of the Learning Management Systems

To increase competitiveness of labor force in global knowledge-based economy it is necessary to accept new paradigm of education. The future of learning needs to move out of the box – whether it is the little red school house or the course management system. We need a new way of thinking about teaching and learning that put not just the learner, but learning at the center [8].

B. Methodology of the transition from LMS Moodle to the open access web applications

The key word for all Learning Management Systems (further LMSs) such as Moodle is the management. Students' work managed by the teacher is a clear indication of the hierarchic structure of activities. Within the last ten years, the team of the Innovation in Education Institute at the Technical University Ostrava has conducted large group (tens of thousands of students) investigations to understand how the Learning Management System works. It can be said that LMSs play de facto 3 functions as you can see in Figure 1.

1. Making the content accessible (static presentation of the text or multimedia study materials created by the teacher or borrowed ones).
2. Administration of students´ work such as reporting, evaluation, archiving etc.
3. Management of students' activities, favorably their *guiding* and the overall *communication* management.

Ad 1. The first part – static presentation of *content* continuously decreases its imperfections. Such created materials exceed the LMS, namely to the open access web applications.

- During the first step forward the files (although multimedia ones but still files) are *uploaded to web outside LMSs*. Their characteristic feature is more flexible accessibility, and they can be used for further courses, mostly done by the same teacher.
- Later on the content is to be designed through the open access applications, i. e. directly in web space. Content created in GoogleDocs can serve as the example but also wiki, blogs etc. are used. There need to be said that the present LMSs, e.g., Moodle version 2.x, support the creating of some hybrids, i.e., they accept the outputs of the above mentioned web applications and they can implement them into their management systems.
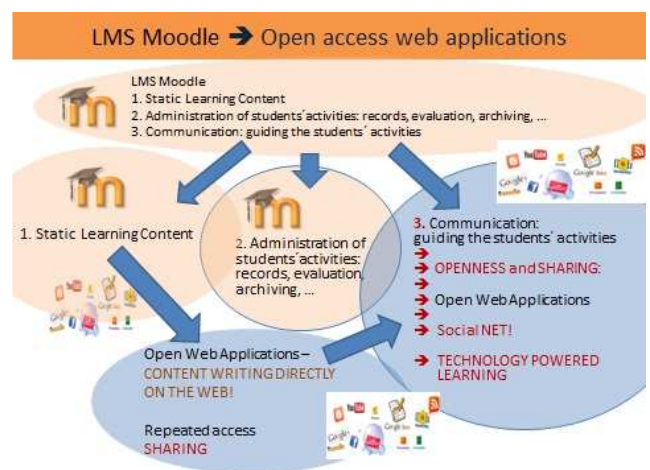

Figure 1. LMS is transferring benefitting from open web applications.

Ad 2. Gradually, it appears that the right role of LMS lies in the second group of the above mentioned functions, i.e.,

the *administration* of students 'work. Reporting, testing, tasks evaluation, and the archiving of the students´ performance can be done in LMS effectively, probably even more effectively than anywhere else. The strengthening of testing and evaluation is not in accordance with the concept of a new lifelong learning model on one hand; however, the current academic environment cannot in fact operate without them. Let us leave them then inside the LMS stating that in this way they are effective, even though their effectiveness for the Model Powered by Technology is more than doubtful.

Ad 3. The creation of the learning content by open access web applications meets with the third part of the above mentioned activities of eLearning in LMSs, i.e., the students' work guiding (Figure 1). It is more effective to *communicate* with the students outside LMS, i.e., in other applications designated to it. It is the s*ocial web* which is used. The guidance by a teacher is lowered and the communication among students increases. In other words, the *mutual continuous connection* among learners is much more stimulating in a process of a creation of collective intelligence. Pedagogue is one of the nodes, only possibly distinguished by the coaching aspects. When the network is set up, Model of Learning Powered by Technology begins. Lifelong Learning goes on in a continuous mutual interaction.

IV.   PERSONAL LEARNING PORTFOLIO
AND PERSONAL CREDIT PORTFOLIO

The LMSs provided a low level entry on the web. In the new model a course exists outside of the student's own learning space. A course is one of many hubs of designed and facilitated learning objects and activities, and it links to an established social network of students and professionals exploring the same content and activities. A course becomes a hub of activities facilitated by the expert – the faculty member. But it remains outside of the traditional course space, in students' own ePortfolios, which transcend the limited space and time that any single course can be expected to provide [8].

Personal Learning Networks are a great way to widen knowledge and learning beyond won [9]. PLNs are created by the individual learners. To extend relevant connection of those who are learning with those of the same interest and knowledge can fulfill specifics of their needs. PLNs provide with an access to significant personalities and experts worldwide. Those form the communities around them, to which others have access. Everyone has opportunity to get the sources and knowledge, which would be inaccessible behind the school walls. Individual learners create their personal learning network as in Figure 2 you can see [10]. Personal Credit Portfolios as social networking products are created continuously. Students are encouraged to make their learning visible. Activities in the course of study subjects are the part of Personal (Learning or Credit, resp.) Portfolios are accessible any time. Accountability and employment of the course participants including teacher is continuously increasing.

As in [5], social networking and personal portfolios creation are used in education:
1.   for personal knowledge improvement (Personal *Learning* Portfolio), i. e.
 •   to store outputs and share experiences,
 •   to reflect on learning,
 •   to take feedback for improvement,
2.   to showcase achievements (Personal *Credit* Portfolio), i. e.
 •   to showcase achievements and accomplishments and to facilitate accountability and employment searches.

Both parts act in mutual interaction and *are not dividable*. The more the man would try to distinguish the "working" parts (Learning Portfolio) and „showcases" (Credit Portfolio) the more work he would have (and never would finish). He would still have to keep in mind unexpected "tricks" of never ending cleaning, setting and structuring the outputs being implemented by the tools of deep web and Cloud Computing. Cleaning is pointless work – we all know that HR officer can always find something what have not been showed in „Credit" Portfolio by applicant. On the contrary, an applicant makes effort to hide imperfect information.
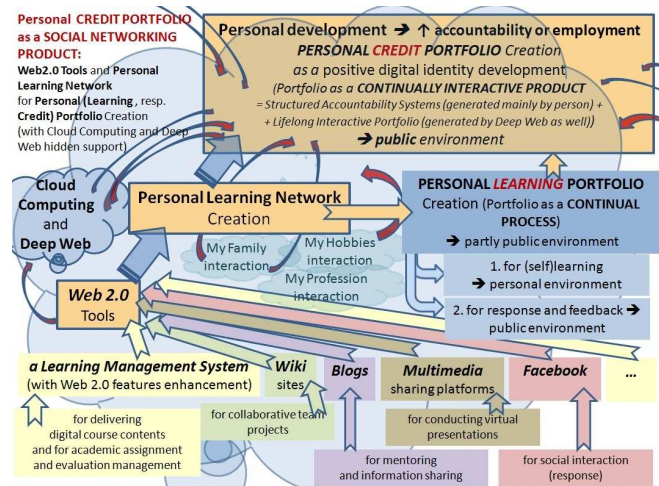

Figure 2.   Personal Credit Portfolio [9].

We have to consider the fact that by each click on web we create „*Lifelong Interactive Portfolio*"! In this way hardly controlled *Mush-up* such as reports on Facebook, Blogs, wikis, Twitter, Ning, YouTube, Flickr, Picasa etc. is created. Students (as well as pedagogues and scientists) have to be awarded that *each their trace can be seen by millions of Internet users*! They contribute to their Personal Credit Portfolio by all work they do on the Internet.

A.   Literacy to PLN creation

The man has to be equipped with literacy, i.e., how to access the community or to build it, how to find people and sources being trusted. It is more complex process than to sit in the class; it is more independent overreaching curriculum of the subject.

New role is hard for both students and pedagogues. Teacher has to be prepared for his students´ activities, also for the danger resulting from the fact students can go anywhere and speak with anybody to fulfill their ambitions. The pedagogue is able to manage the students to active safely and effectively in a way socially demanded. Active approach of the pedagogue to educational process demands to be equipped with ability to open conversation, which is the base of continuous connection, providing and receiving feedback. Literacy to PLN creation can be acquired step by step and the advices of predecessors can be used as well.

B. The way from PLN 1.0 to PLN 2.0

To develop their personality students get ideas how to start with building their own PLNs. There exist many recommendations but all have one thing the same – to proceed by two phases from PLN 1.0 to PLN 2.0.

1.   The best way to enter the new world is to become consumer first, i.e., to acquire the skills to work at reader level. The aim of this phase is PLN 1.0. It is the mark overtaken from the term Web 1.0, whose basis is the reading on the Internet (Read Web alias Web 1.0).

2.   Then the personality's development towards 2.0 skills is able. Students and pedagogue can go towards creator role. Individual starts to be active. PLE 2.0 is analogical extension of the term Web 2.0 where it is about not only reading but also about active writing (Read-Write Web alias Web 2.0) [11].

Above mentioned two steps are applied gradually to the process of acquiring the knowledge to work with others and others web tools suitable for interaction and reflexing. Among those chronological reports, wiki for web creation, multimedia for active creation of web content, microblogging, today Twitter and social networking, today Facebook, Google+ are. Everything can be shifted to hundreds of web applications but all the time the effectiveness of such activity has to be considered.

C. Tools integration

We can integrate Web 2.0 tools into (university) course delivery. One of the possibilities is using widely integrated tools of Google as an environment enabling easier integration of partial tools while logged only ones. In this case it is suitable to create an account at Google and to create own iGoogle. Gradually it can be supplemented by some other selected tool beyond Google group. Entering the new and new fields can be repeated in the model from 1.0 to 2.0.

Blogging. It is good to devote the first cycle "from 1.0 to 2.0" acquiring skills to blog. The real output of it is going to be not only skill but the first part of own PLN as well.

1.   To become involved in professional social network according personal interest by choosing some bloggs 5 at most being interesting for the individual as for determined aims. By RSS channel to log for receiving chosen bloggs and to watch them through Google Reader (to make it the part of personal iGoogle).

2.   To manage own blog by own inspiration e.g., using Google service Blogger or Edublog or others. To

believe in an opportunity to be involved in conversation and commenting bloggs. Most of authors wait for reactions of the readers and are prepared to answer them. There is no reason for fear.

Microblogging. At the same time or with small time lag the two phases' cycle can begin e.g., microblog. First to get known it by reading, later to become active in writing notes and finally to write comments to the others´ notes:

1.   To become involved in microblogging by reading Tweets at Twitter. Five well know communities can be chosen to watch their content being produced and shared. In short moment when 140 symbols are read there can be learned a lot. Especially by creating the connections between earlier acquired terms. Besides the professional microblogs we can watch also public personalities such Twitter BarackObama. As a rule big surprise comes how effective such short notes can be.

2.   Later to create own Twitter and be active on it. The last thing to do is to comment Twitters of others.

Google+ (Facebook). To start the work on Facebook the same scheme suits from reading (1.0) to writing and active contributing (2.0).

Wiki. Analogically can be proceeded when using other tools, e.g., wiki should not be excluded from any educational community at universities – students "cooperate" on daily basis. Wiki environment can be used advantageously to administrate web space of online course as accessory of Learning Management System. LMS is good to keep for achieving of selected outputs relevant for academic crediting. But to manage activities and cooperation there is opened web space suitable to use. This role wiki fulfills greatly.

Others. Many web application can be used when building own personal learning network. Some of them are unique; others are alternated in few modifications. By Top 100 Tools for Learning being elaborated every year the picture about them can be made.

1.   Students write their own notes out of information acquired to their PLN at different spaces on the Internet.

2.   They watch the work of their colleagues as for topic and discuss it.

3.   By teacher's support they achieve agreement in so far work.

4.   They create and publish own material for the community of study subject's online course.

5.   They write comments to colleagues' materials.

6.   They achieve solutions and results by cooperative work

Students develop their present Personal Network. At the university they go further and further from the closest surroundings to general audience.

1.   When entering the university the students are managed to build their own portfolio in such way to be seen by their schoolmates, potential members of working teams and their teachers.

2.   Later on their openness and outputs sharing should expand through grades as well as universities.

3. And finally, their portfolios become opened to the general public.

Each step of the way, their audience gets wider:

1. Students start from a small circle of trust,
2. get feedback,
3. incorporate that feedback into their work,
4. and venture into the next larger audience circle.
5. By the time their work reaches the general audience, their portfolios have been vetted and debated by multiple audiences starting from the students´ closest circles of peers and mentors [8].

Next, we consider an exchange of opinions beneficial as for the objects, by which the portfolio concept should be receiving. In the frame of education there is an option to systemize a few portfolios, some of them individual, some connected with universities. Washington State University in its concept Eportfolios for Learning implements three areas:

1. Student Portfolios promoting student's engagement and ownership of learning.
2. Teaching Portfolio offering a faculty a method of assessing, reflecting on, and improving teaching skills.
3. Program Portfolios highlighting the alignment of learning outcomes on multiple scales.

There is another, fourth option to develop above mentioned resulting from Innovation of Education Institute of VŠB – Technical University's experience:

4. Researcher's Portfolios promoting researcher's engagement and ownership of research.

In the research area the support of individuality and institution through Web 2.0 is even more uncommon. Researchers are tired of not ending results reporting by the databases to be filled with data because of insufficient integration and systems´ inability to generate such data to be used by different views and purposes. Practically there is no such a research being interactively supported by portfolios development enabling the author to invite the others to the space to give feedback or collaborate.

V. CONCLUSION AND FUTURE WORK

As it can be seen, when going through internet sources, a growing number of institutions see the benefits of new technology and collaborative models and respect Web-enabled transparency as a new force. The university may be going through the biggest change as well. Confirming case studies having been provided showed that it is possible to act similarly also in more conservative environment of Central Europe universities. Methodology of implementation of end-users role in the processes of academic education has been proposed and proved. Respondents of statistically significant size declared significant changes as for their approach to study and its results. They were able to work more by themselves and independently, to find and use sources out of their community and the outputs of the others motivated them to better study etc. Quantitative and qualitative results analysis exposed an increase of significance of users-creators and effectiveness of educational activities compared to currently used educational model under Learning Management Systems. The results become touchable

contribution to the graduates´ employment in a shape of their Personal Credit Portfolio.

Academic life prefers idleness and pseudo-safety of a hierarchic structure and non-transparency and thus rejects the openness and sharing. The reason for such behavior is the fear of losing its exclusivity. It is widely known that the changes are brought about by the information and communication technologies. And while these seemingly uncomfortable changes are unwanted, it leads to rather cold acceptance of the corresponding new technologies. Such academic institution is far away from the model Technology Powered Learning. Institutions with this philosophy cannot gain more than a locally-limited significance and thus their importance naturally descends although they try to show the opposite by all the evaluation mechanisms.

The way towards a new conception can be paved by a creation of personal virtual communication networks. Learners (also teachers and researchers) profit from Web 2.0 applications' effort and create their own mutually connected net of their individual learning, Personal Learning Networks (PLNs). Mush-ups of activities and continuous responses through open web applications are the content of their Personal Learning Portfolio.

By continuous activity a man build his Structured Accountability System as showcase achievements for accountability or employment. The tools of Deep Web and Cloud Computing help by facilitating employment searches. Continuously interactive lifelong Personal Credit Portfolio (PCP) is built as an individual expression of Positive Digital Identity.

Personality and its development are powered by technology. The result is the continuous development of personal credit and accountability in the labor market.

This article offers to discussion the experiences resulting from acceptation of collectivism principles in university education and from the practice of supporting the building individual PLNs. Such observations are to disposal when the participants (students and pedagogues) have been managed to go outside their classes, work continuously even when they are not together in the class, to go beyond curriculum of presently studying subject. Concentration of content being prepared in advance has been shifted to the principle of users' generated content as the centre of learning. It appeared the students wanted and was able to find other environments and people with the same interest. They carefully have been finding the effort of realized conversation (using different tools of social net) in the field they want to learn or – by pedagogue's view – which is the aim of subject's curriculum. This all greatly increased their internal motivation to learn.

In real net connection of all participants during the education the literacy of the students has been developed and they have been able to build their own PLNs. Students gained skill to find people and sources in determined context, which can be trusted to, and the ability to connect own net to relevant and inspirational bundles.

The ability to create one's own Personal Learning Network or Personal Learning or Credit Portfolios 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 [12]. The ability to create one's own PLN supports the ability to be adaptable. And to be adaptive is to be perpetually current.

Students are drifted by their own positive digital identity development on Web 2.0 cloud. They explore that learning starts to be the natural omnipresent part of their lives, change their life quality and improve their accountability or employment. Real development of their personalities is an indisputable fact – on Web 2.0 clouds.

A Model of Learning Powered by Technology enables, motivates and inspires all students to leverage the power of technology. Experiences in how to provide personalized and student-centric learning and enable continuous and lifelong learning can be transferred further.

Universities have to find by themselves how to reinvent the rules of business to survive the flat world created by a global Internet as those revolutionary changes have to accept all human activities. To improve university's and its staff's credit (and thus to increase their employability) means:

- Open our activities to the world, actively build own Personal Credit Portfolios.
- Support their aggregation into dynamically kept university credit – University Portfolio.
- Declare the fight against such university's presentation as the statistic websites are.
- Open University Net to communicate with wide public.
- Support the strategy of personal (and institutional as well) positive digital identity development on Web 2.0 cloud.

Innovations being implemented from down to up can help to destroy university bureaucracy and support natural methods of research work. Our Experiences show that by implementation of such principles as openness, peering, sharing and acting globally [1] brings great results not only in business sphere but at universities as well. New principles contribute to university credit's improvement not putting finances into the marketing. The same principle governs one's credit development – student's, pedagogue's or researcher's.

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