

IX. Évfolyam 3. szám - 2014. szeptember

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INNOVATIVE METHODOLOGIES IN THE CLOUD EDUCATION

Abstract

The article is to describe how different innovative methodologies might support the e-teaching/learning in higher- education. The author has developed a specific CTLM (Competency-based Teaching Learning Model) and 5R Learning Strategy, - which has been effectively and efficiently used at King Sigismund Business School, first of all for Accounting and Taxation courses, for the last five years, and compares it to a similar, but independently elaborated system, called Agile Teaching/Learning Methodology (ATLM). The ATLM has been introduced and used at the City University of Hong Kong. Both teaching/learning models aim at increasing students' motivation to learn, to develop their personalities, their commitments and positive attitudes by compiling and using state-of-the-art interactive teaching materials, acknowledging their results performed, rewarding them, i. e. how to find an enjoying way to the effective learning process. Both CTLM and ATLM can be considered as well applicable for a wide range of teaching/learning subjects, in this way both two models can be applied not only in the field of most common civil sciences, but in specific areas, a. g. the military one – except materials with classified information – as well.

A cikk bemutatja a különböző web-alapú innovatív módszerek oktatást támogató szerepét a felsőoktatásban. A szerző ismerteti a Zsigmond Király Főiskolán 2009. óta hatékonyan alkalmazott saját fejlesztésű Kompetencia-alapú Tanítási tanulási modell és az 5R tanulási stratégia működési elvét, összevetve azt a Hong Kong-i Egyetemen sikeresen bevezetett tanulást támogató „Agile Teaching Learning Methodology” modellel. A bemutatott modellek célkitűzései a tanulók tanulási motivációjának növelése, kommunikációs képességük fejlesztése, a pozitív attitűdök, a személyiség fejlesztése korszerű interaktív tananyagok alkalmazásával, illetve megoldást találni a tanulói teljesítmények elismerésére a modellek által felkínált élvezetes és hatékony tanulási útvonalakon. Mind a két modellnek előnye, hogy nem csak a szokványos tárgyak tanításában/tanulásában alkalmazhatók hatékonyan, hanem a legkülönbözőbb tudományok és szakmák, például a hadtudomány területén is, a nem minősített információk oktatására.

Keywords: *self-learning, learning methodology, teaching methodology, competence-motivation, feedback, adaptive methodology*

INTRODUCTION

The education in virtual environment requires the transformation of the traditional teaching-learning environment, the knowledge and use of the modern information and communication devices. For the sake of the developed world’s future, socialization of the “lifelong learning” has become a primary task, i. e. a piece of norms, part of the culture. Under these circumstances, the state-of-the-art e-learning, i. e. distance education – characterized by the learning management, the open learning and the virtual environment of education – has received a specific role.

When highlighting the subject, the “premissa”, I have set forth, is that the key dimension of the high quality virtual education is the learning material itself, if it is able to appropriately influence and shape – through a relevant transmission methodology – the further key elements: the student, the teacher and the teaching-learning environment.

On the basis of the above “premissa” I developed the Competence-based Teaching Learning Model (CTLM) and 5R Strategy.

The methodology is being relied on the appropriate aspects of the knowledge management, the learning management, and on the aim at assisting students in finding and developing their own learning style, in order to obtain real knowledge, through a self-relied learning activity. The prerequisite of the successful learning is that the students know “how to learn”, and for this goal the learning process is to be continuously learned by them. The methodology strives also for supporting the teachers in developing the learning environment, where all necessary conditions are provided for the continuous development of basic competences of the students. [1]

The Agile Teaching/Learning Methodology (ATLM) of the City University of Hong Kong is a teaching/learning methodology designed for higher-education based on the best-practices and ideas from the field of software engineering and leveraging upon concepts from agile software methodologies. The methodology emphasizes agility, communication, feedback, the teaching/learning process and encourages communication, knowledge sharing and self-learning individuals. [2]

COMPETENCY-BASED TEACHING LEARNING MODEL

The CTLM (Figure No.1) emphasizes: in the teaching and learning the focal persons are the teacher and the student and they contact each other by the learning materials (e-books). The e-books are „knowledge transfers”, the substances, tools and methodologies, so it is the tools for presentation of the unity of learning organization.

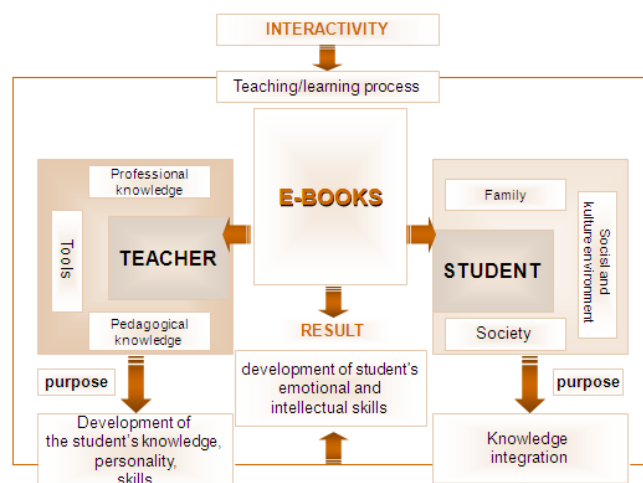


Figure 1. Competence-based Teaching Learning Model [1]

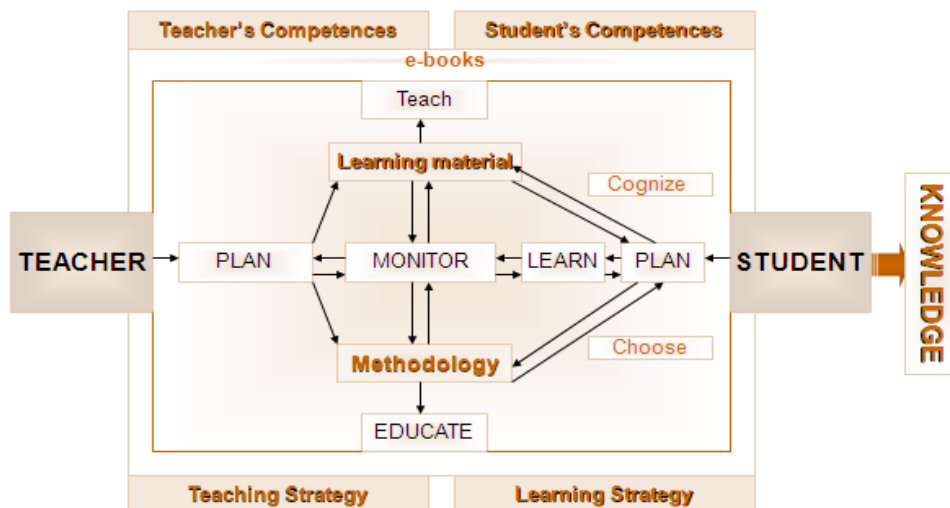


Figure 2. E-Teaching - Learning Process: LLL cycle [1]

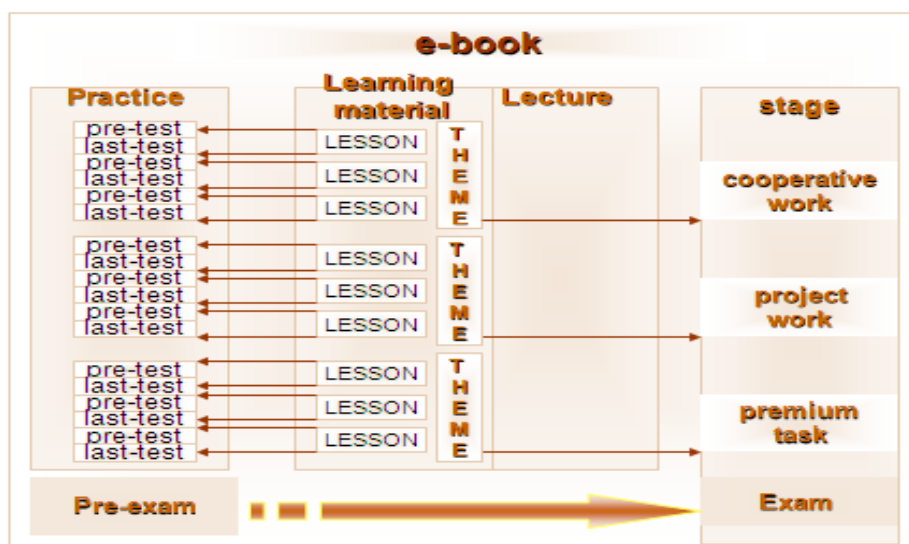


Figure 3. Levels of the learning [1]

The model is an iterative methodology (Figure No.2) to indicate the learning is a never ending process.

The teacher plans the e-learning material and offers it for students. Based on integrated substance and methodological solutions the teacher becomes to get some information now and then (continuously) about the knowledge level and the social-emotional development of the students. The teacher, based on the acquired information, can prepare special and individual development plans for all students to help them to catch-up, to be more confident in course material or to learn independently.

The material needs to cover substances and methods, which facilitate the differentiated education, the personalized development.

For every student, based on preliminary survey on his/her pre-knowledge (the knowledge-level at the beginning of the course), the learner/learning differences, his/her overall strengths and weaknesses, the teacher has to offer the best substances and methods. The student has got freedom of choice; he/she decides what the best is for him/her in the given situation.

In the learning level-system of the e-books (Figure No.3) the model requires to achieve to reveal each and every student's individual values, to get to the maximum interactivity and communication skills within framework of the education.

In the learning level-system, the 5R learning strategy (a 5-level-learning-system), appears to give an offer for the student to create his/her self-learning strategy, as follows:

- Read! - Material
- Reflect! - Lecture
- Recite! - Practice
- Review! - Stage
- Rest! - On each level

In the level-system of the e-books, based on 5R strategy, the competence of the students evolves continuously; their pre-knowledge escalates “from now to then”:

The learning “*Material*” module, which contains the actual level and quantity of information to be acquired, provides opportunity for a self-relied acquisition of the knowledge for each individual student, i.e. learning on his/her own. The module uses passive and active elements, supported by multimedia devices, for presenting the topics, illustrated by pictures, figures. In the closing section of each major chapter of the learning material, project works are inserted, which encourage students to work with others in teams, consequently, to get acquainted with partner students, to emphasize the importance of community-building. Students are invited to measure the level of their knowledge through practical project works, when working together with other partner students, in the framework of on-line sessions. [3]

The structured team works allow students to realize that everybody possesses important and specific intellectual abilities, even though unique ones, through which all individuals may contribute to the successful teamwork.

The participation in the team work requests an intense, self-relied contribution from the students, it integrates the knowledge and the students are responsible for each other's piece of work, in this way and as a result, a relation-net of mutual interdependence will be formed between them. [4]

The most important aspect is that for the successful solution of the team work, it is inevitable to mobilize the students' colourful abilities. The teacher has a possibility and task for “mapping” the individual capacities and capabilities of the students. Also, the teacher's task is to listen, from the background, “behind the curtain”, to the students' learning strategy, to control the full learning process, to encourage, to activate the students and to support, if it is needed, the ones with difficulties to keep the team's pace and to well integrate into the team work.

The “*Lectures*” module is the second level of the learning process, the level of deepening the knowledge. The process is eased and supported by interactive elements including a systematic feedback/teacher's cooperation. The lectures are fundamentally being relied on an illustrative-explanatory method. The essence of this method lies in visually presenting, modelling the subject, even playing it, to the extent possible, and commenting and explaining it in a short text. The advantage of the method, that it presents the topic in one shot and in its context, at the same time, while directing the students' attention to the message. Notwithstanding, the very key element of all learning action is the perception, the cognition. For each participant, the progress made on his/her own, the self-relied development, will multiply the efficiency of the learning process.

The “*Practice*” module is to measure the level of acquisition of the knowledge. Both the teacher and the student receive a clear feedback on how and to what extent the latter has managed to acquire the learning material.

It is to be underlined: in order that the assessment can fulfil its motivating function, the teacher – based on the students’ performance shown during the works of the Practice module – has to analyse everyone’s difficulties in learning, continuously.

This module is to serve for strengthening self-confidence of the students, as well. Out of the works with different difficulty level of the Practices, everyone - in accordance with his/her own assessment regarding the level of knowledge already acquired by himself/herself - may select the appropriate one. The position of having an opportunity of the choice increases the student’s autonomy sensation in the learning process. [5]

The opportunity of the choice among the works of different difficulty level increases the probability of the successful problem solving, as well, which influences the competence sensation advantageously, while the successful solution of the works strengthens the student’s self-confidence, which is extremely important for both the intellectual health and the learning success, as well.

The “Stage” module is the level for acting and performing. It emphasizes the importance of “the acting school” the view that the “acting” is inevitable both for developing the thinking and for maintaining the interest. It gives an opportunity for the students to prove that they can apply their knowledge in practice. [6]

The student will select a case study out of the works in the “Practice” module, prepare its script, then present it, “play” the story and show the work’s possible solutions.

The Stage provides with further experiences of joyful learning, it raises the lower status students’ interest, too and increases their autonomy sensation and confidence. The Stage’s atmosphere, being characterized by strong cooperation, enhances the inner motivation of the participants and a long lasting impact/endurance of being motivated, which may only be fruitful in such a learning environment, where the single, individual elements, the “players” themselves are strengthening and presupposing each other.

SUMMARIZING CTML’S CHARACTERISTICS

The specialty of the model, the interactive relationship between the teacher and student is created by e-books. As a result, the role of the teacher, the student and the learning material changes dramatically, compared to the traditional education.

The teacher plans and offers the learning materials, learning methods, learning techniques while takes into consideration the cognitive styles, the individual learning differences of the students.

Based on the offer, the teacher gives freedom of choice for the student. The student decides what is the best solution is for him/her in the given situation.

In teaching/learning process, inseparable from each other, the basic competence of the student expands, evolves on the 4+1 levels of the e-books.

The students get the skills to apply their knowledge, experience, personal facilities in the different situations of life. The model can be efficient solely by combined application of the three part-structures.

THE AGILE TEACHING / LEARNING METHODOLOGY (ATLM)

The Agile Teaching/Learning Methodology (ATLM), which has been successfully used at the City University of Hong Kong for a number of years, shows a lot of similarities to the Competence-base Teaching Learning Model (CTLM).

As their names (ATLM, CTLM) show they seek appropriate methodologies for teaching and learning. So the authors emphasize the teaching and the learning should go parallel, the teaching process and the learning process be inseparable from each other, connote and integrate each

other. “Teaching and learning (of course) go hand-in hand. ATML is a balanced methodology that supports both sides of the equation.” [2]

The Agile Teaching/Learning Methodology is an iterative Teaching/Learning Cycle, so the cycles of the methodology are performed over and over again in iteration. In ATLM there are two cycles that operate parallel in each iteration: one for the teacher and one for the student. (Figure 4)

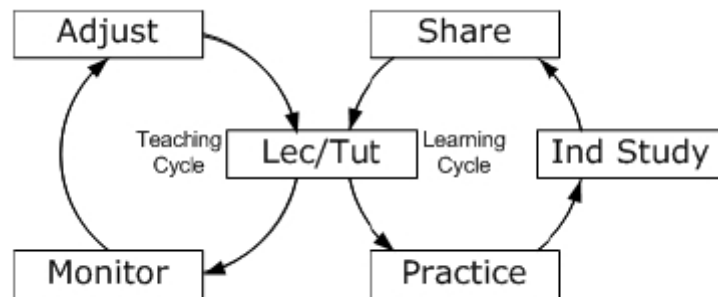


Figure 4. Iterative Teaching/Learning Cycles (ATLM) [2]

The Teaching Cycle is for the teacher to follow the student’s learning process, his/her professional and emotional development while the Learning Cycle is for the student to learn independently, to practice and to measure his/her knowledge continuously, to share his/her acquired knowledge with the teacher and the mates.

Both The Teaching and Learning Cycle share the Lecture/Tutorial task, so the contact is formed between the teacher and the student by the Lecture/Tutorial. In Competence-base Teaching Learning Model the e-book presents this contact, the e-book is „knowledge transfers”. (Figure No.1)

As we can see in Figure 4 the teacher’s one main task is to control the learning process. “The teacher must constantly monitor student progress as well as feedback from students on their own teaching progress/performance.” [2]

The systematic feedback is considered as a key element in both models. The feedback will only be able to promote and help the students in an effective way, if the teacher receives, in respect of the student’s knowledge level, as precise and up-to-date information as possible. Specifically, the ATLM emphasizes the immediate feedback, e.g. providing the students with the opportunity of a simple weakly quiz. As a result of the quiz, every student receives a feedback “in no time” on how and to what extent he/she has managed to acquire the learning material.

In the feedback the most exciting question is the statistics, the results should be anonymous or public. Whether can the weaker performance, the slightly worse result demotivate? Whether can the excellent performance motivate? Whether can the excellent performance increase students’ self-confidence? These questions are too complex and sensitive questions.

In the practice of the Competence-base Teaching Learning Model the quiz is anonymous, however the student can choose the other methods of the self-control, namely the project-work, cooperative-work, so can solve some tests together whit the mates, later can present together on the stage, so in the virtual classroom. In the project work, both the teacher and the partner students are expecting an active participation. They are expecting that everybody takes responsibility for the result of himself/herself and for that of the team, as well. Furthermore, every student will be a competent and equal participant of the learning process. In the course of the team works the students are realizing themselves that everybody possesses important intellectual abilities, even unique ones, through which anyone may contribute to the successful team-work.

The above features strengthen another important specificity of ATLM: the Iterative Teaching/Learning Cycles, namely the teacher's support/adjust, so the teacher needs to follow the learning process, to intervene, to prepare schedules, learning-plans, to help the students to explore, research, acquire experience (Figure No. 4)

So the teacher needs to ensure students to get into an environment where they can get quality knowledge, and their brain is functioning well.

SUMMARIZING ATML'S CHARACTERISTICS

The key characteristics of the ATLM are the agility, the practice, the feedback, the independent study, the knowledge sharing and the adjustment. These values can operate the model effectively and can provide rich learning experience for the students.

E-LEARNING PLATFORM

The presented innovative methodologies have supported the e-teaching/learning in practice in higher-education institutions for a long time. However, a methodology without modern technology may not be viable. At the same time, the interactivity is a crucial function of e-learning Platform, what be called the spirit of the e-teaching and e-learning. The e-Learning Platform, the hardware and software environment have to be adaptive, namely in feedback, in pathway, in teaching/learning.

Adaptive eLearning is learning and teaching medium that uses an Intelligent Tutoring System to adapt online learning to the student's level of knowledge. Adaptive eLearning provides students with customised educational content and the unique feedback that they need, when they need it.

Adaptive eLearning creates the best possible learning experience for students by emulating the talents of great educators. This is achieved by using technologies that adapt and shape teaching to the needs of the individual student. Each student is unique, has varying levels of knowledge and learns differently. Researchers have found that students' performance improves when online educational content is personalized. The adaptive eLearning allows the teacher to create and teach with rich, interactive, and adaptive educational courseware.

I believe that teachers should have complete control over their students' learning experience, what Adaptive e-Learning Platform can support.

We know the students, when learning, often make mistakes. This is not anything exceptional. Would this happen, teacher has to provide feedback to students and has to guide them back to the right way. Adaptive eLearning systems allow teachers to do the feedback exactly when it is needed.

As emphasized, every student – like any human being – is different in many respects. Students have different levels of acquired knowledge; their problem solving approach is also different. Accordingly, teachers need to manage all the students and every student, individually. For example, if a student already knows what the classmates are doing or if a student would like to skip, ahead, to a more challenging task, or if a student has less knowledge in a topic, then teachers should be directed the learning to help to understand the concept and the relationships.

Adaptive eLearning systems lead students via different customized learning path, where the teacher attends, controls, adjusts, comments, where students need to demonstrate the understanding with a set of questions.

A good teacher approaches his/her students, their learning activity in an adaptive way. Teachers regularly adapt homework and assignments according to their students' performance. So, the teacher teaches while continuously learning how to teach better. As teachers are using

course-specific teaching/learning materials, they always need to adjust the teaching/learning environments starting from the online educational content to potential changes in the technological architecture, where they have certainly to work together with programmers and to rely on complex software systems. An Adaptive eLearning system has analytics tools that allow teachers to understand their students' learning and then modify their online lessons accordingly, as well as to improve their contents and teaching easily and continuously.

The CTLM (Competency-based Teaching Learning Model) – which is used at King Sigismund Business School – is supported by Moodle framework and it ensures the interactivity between the teacher and the students. This advanced technology is able to meet the requirements regarding the agility and appropriately sequenced communication.

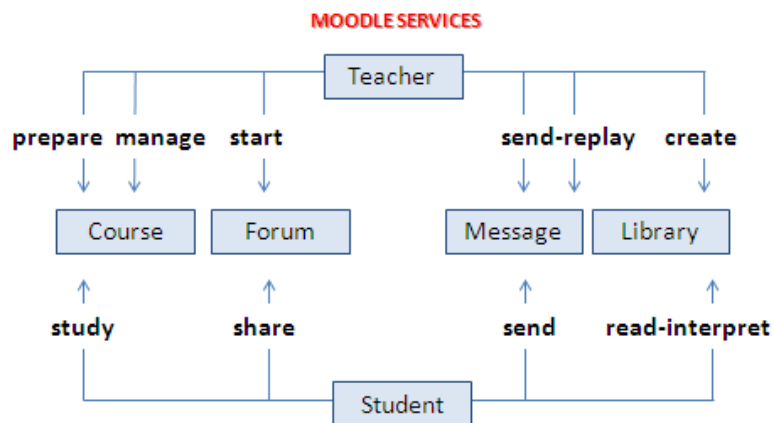


Figure 5. Moodle-services - the serves of the CTLM [1]

One of main features of the Moodle-framework is the WizIQ¹ Virtual Classroom integrated with Moodle to create new capabilities for synchronous learning - all within the LMS environment.

The WizIQ Virtual Classroom can simply be installed on the Moodle servers, then teachers and students can access the classroom seamlessly. All WizIQ functions – scheduling, managing classes, uploading contents, viewing records etc. – are accessible as being integrated in Moodle.

By WizIQ Virtual Classroom module, live class sessions can be implemented as Moodle activities and students from around the world can have seamless access to synchronous events within the context of a blended Moodle course.

Teachers can edit the schedule for their upcoming classes and make changes to the uploaded content, again and again directly within Moodle.

WizIQ Virtual Classroom records every time students log in and out. An attendance report is generated by the end of the virtual class-room lessons so the teachers can follow their students' time spent in learning and that may be an essential point of view in assessment of the students' performance.

All classes, all events can be recorded in WizIQ. Teachers can allow students to view the records online and/or to download them that they can use them at any point in time. The system sends reports to the teacher in a regular way (i.e. weekly) to show how often the recordings were viewed and/or downloaded by the students.

“WizIQ Virtual Classroom in Moodle” is a new opportunity to follow the students' learning, to develop the teacher-student, the student-student relationships and communication, when providing an effective and efficient feedback.

¹ WizIQ is an online learning and teaching platform that connects educators and students through its WizIQ Virtual Classroom technology

[Schedule Class](#) [Manage Classes](#) [Manage Content](#)

Wiziq Konzultáció

Teacher	You
Class Status	upcoming
Timing of Class	8/15/2014 6:00:00 PM
Time-Zone	Europe/Budapest
Duration (in Minutes)	30
Recording opted	Yes

[Launch Class](#) | [Edit Class](#) | [Delete Class](#)

Figure 6. Students can launch a recorded session directly from their Moodle course page WizIQ [7]

Obviously, a high level of sociability in the teaching/learning process is inevitable for the efficient operation of the presented educational models.

In this respect the sociability includes an adequate level of motivation and tolerance. In the teaching/learning process it is usually more difficult to teach how to think than what to think. Students have to be able to think critically and to learn to work – in addition to their individual efforts – together with others and rely on supports emerged by the common/classroom activity.

For an efficient use of WizIQ Virtual Classroom it is advisable for teachers to insert learning-methodology lessons for students-groups in each course held and, in this way, to teach the creative thinking, hard work ethic to give a sense of achievement etc.

The e-learning platform of the Agile Teaching/Learning Methodology (ATLM) provides a variety of collaboration and knowledge sharing technologies such as blogging, commenting, instant messaging, wiki and RSS, which technologies can develop the sociability, the students' adaptability to the community [2]

SUMMARIZING E-LEARNING PLATFORM'S CHARACTERISTICS

The adaptive education in the educational process of differentiation is the version in which the student can choose the different learning paths and goals, capabilities, knowledge correctly, and where there is not a special path between them, which would be more valuable than others. The aim is to align the education of students' individual differences in variable, dynamic and flexible manner in order to create optimal conditions for all students.

Represents on the one hand the student's the adaptation to the existing conditions, on the other hand, that the teacher tries the terms to adapt to the student's needs and their current status, attitude.

The essence of the adaptive learning organization the teachers need to learn how to harmonize their organizational, tutorial and educational activities and the students' basic needs. [8]

Adaptive education uses both computers and different web applications, as interactive teaching and learning devices. These tools adapt the presentation of educational material according to students' learning needs, as indicated by their responses to questions and tasks. Adaptive learning systems endeavor to transform the learner from passive receptor of information to collaborator in the educational process. [9]

In the cloud teaching success of teaching/learning is mainly technology-dependending, as the teacher can display his ideas, the teaching-learning purposes, can stimulate the students, to help the lower status students, to develop the excellent students, can organize exams, cooperative-work, project-work, solely by technology. The technology encompasses aspects derived from

various fields of study including computer science, education, psychology and information security. The latter is an important issue for many reasons. The security professionals emphasize need to increase security, to defend the computer networks against the potential attacks as real threats. “Nowadays, computer is used more and more in our everyday life. As the number of computers increases the hazard of attacks against our computers is also growing.” [10]

In each sub-fields of the teaching-learning process, such as the testing, or to convey discipline- specific knowledge (e.g. unrated but sensitive information of the military engineering sciences) is required safe and reliable technique, so choosing the right technology is a priority task.

CONCLUSION

Teaching-Learning environments today are more complex than ever. The main questions are: How to teach? How to learn? Which pathways may be the most effective to teach the students? How to follow the students on the different pathways? What are the methods that we use to obtain information and integrate it within our knowledge base? And how are these methods of learning changing within a technologically connected global society? How to change reliable and safe technology?

At ever-changing teaching-learning environment more and more universities, schools, colleges, learning professionals have to be adapted to the cloud technologies and utilize the opportunities offered by them to better serve their students according to their individual characters, capacities, personalities; need to develop the learning materials, to continue and fine-tune research activities in the field of modern teaching-learning methodologies, to find the best pedagogical practices.

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