ADAPTATION TO STUDENTS’ LEARNING STYLES IN THE BLENDED LEARNING APPROACH

Maria Goga, PhD, lecturer*

Abstract
The research presented in this article aims at exploring the relevance of the students’ learning styles for the design of blended learning programs. To achieve this purpose we made a research study with teachers and students from CREDIS, University of Bucharest. We explored the existing blended learning experiences as well as the students’ and professors’ opinions concerning the adaptation of instruction to the students’ learning styles.

Keywords: blended learning, learning styles, instructional design.

Almost unwittingly, the knowledge economy changes education so that the traditional system comes to be touched by nowadays technologies. Many issues in public, economical, cultural and educational domains have been transformed since ICT and internet became current practice. At the same time, the labor market brings about new challenges for educators and learners by giving them the opportunity to maintain the rapid pace of the economy in good correlation with personal and career development. For many adults the traditional education system is no longer an option given the need to keep up with the fast pace advancing technology. Therefore, blended learning that combines traditional and online learning represents an efficient and flexible means to study according to one’s personal rhythm.

Understanding how students learn is an important issue not only in traditional

* Technical Civil Engineering University of Bucharest, Romania
goga.maria@yahoo.com
approaches but also in blended learning. This aspect is crucial not only for those who design programs but also for the facilitators. Teachers/instructors/facilitators are continuously challenged by both the fast developing technologies and the wide range of students who come with various learning styles and needs. It is well known that a single instructional model cannot satisfy all students (Scaller et al, 2007). Nevertheless, facilitators or instructors will know to select the adequate teaching strategies as well as the technology to comply with instructional objectives and with the students’ learning styles so that all students are involved in the learning process.

Initial research into learning styles highlights that the variety of the students’ learning styles has considerable importance for the instructional process (Keefe, 1982). Actually some styles are better developed and more preferable than others. Other styles are somehow marginal and they need sustained effort from within (the student) or the outside (teacher/instructor/facilitator) in order to delineate them. The various learning styles are the result of more components such as: the students’ life experiences from the past, the students’ life styles or the way they got used to learn (Kolb, 1984). Also, preferences for some learning styles change with time (Dunn et al, 1993).

Among the most recent research concerning the learning styles we count the studies which connect the latter to instructional technologies and their design so that all students benefit from active involvement (Manner, 2001). Many a research suggest that students who are interested in online-based courses are independent learners who prefer an abstract thinking mode (Grasha, 1996). In this context, Farmer argues that if online technologies are part of a course and if they connect with the students’ learning preferences then course planners as well as teachers/instructors/facilitators should be aware of the particular students’ learning styles in order to know how to envisage the entire design (Farmer, 1995).

Adapting instruction to the students’ learning styles – Within the context of the advance of the technology that is used in blends, the idea to adjust, adapt the teaching approach according to the students’ learning styles is more than welcomed. There are many studies that show the efficiency of combining multimedia with online technology within the instructional process (Najjar, 1996). Most of the studies in this category are based on the learning styles as they were classified by David Kolb (Kolb, 1984) and Felder & Silverman (Felder & Silverman, 1998).

The process of adapting instruction could or should start with a brief
identification of the students' learning styles. Therefore, taking into account the fact that the students who learn in blends participate both in face-to-face sessions and in online ones, we consider important to highlight the basic elements the teacher /instructor / facilitator could consider when s/he tries to adapt the instructional process to the students' learning styles.

A first step in understanding how the students learn might consist in a preliminary analysis of their learning styles. Zapalska and Dabb (Zapalska & Dabb, 2008) suggest a number of various ways to identify learning styles. These are the following:

- **discussions** about how students remember simple things;
- **observations** of students' specific behaviors that can help when the latter are observed during classroom activities. The instructor/ facilitator will record the exact way each student accomplishes a given task. The students' behaviors in the classroom can tell us a lot about the students' learning styles;
- **short personal interviews** with the students at the beginning of the course are primary sources to understand how students learn. Their learning experiences are revealing about their attitudes about teaching, learning, preferences for certain learning techniques;
- **a VAK or Kolb, Felder & Silverman etc. questionnaire.** When students and facilitators manage to understand the students' learning styles it is high time to select the most adequate technology to plan, implement some learning experiences that are more effective during course situations.

In this context the following question arises: How much and how far should we personalize instruction? Suppose all the above mentioned steps are taken and yet students have trouble with their learning. We should be reminded that students are very different from one another in terms of personality, learning style, acquisition level, learning media. It is likely that the system that personalizes instruction is well implemented but the possible resources one could use are limited. In extra, let us also suppose that the crisis time when the students might have had the largest and most adequate support is gone. In this case, we face an over-personalization where the students' attention and motivation do not reach their expectations.

**Personalized instruction** can be defined as a form of instruction which is adapted to the student's learning style. In the framework of the online medium of learning, a medium which is used in blended learning too, there are models
of personalized instruction which can facilitate learning according to the students’ learning styles. Table 1 briefly presents some models to adapt instruction according to the students’ learning styles.

**Table 1. Models to adapt instruction according to the students’ learning styles (adapted from Franzoni & Assar, 2009)**

<table>
<thead>
<tr>
<th>System</th>
<th>Learning style</th>
<th>Adaptation</th>
</tr>
</thead>
<tbody>
<tr>
<td>ARTHUR</td>
<td>Visual-interactive, readings and various texts styles</td>
<td>* Adaptation is done by media that are representative for each student. * Audio representation (for auditory students) is done by making use of sound and radio broadcasts. * Puzzles, animations, games and riddles are used for visual and kinesthetic students.</td>
</tr>
<tr>
<td>CS388</td>
<td>Felder-Silverman learning style types, global sequential model, visual-verbal, sensory-intuitive, inductive-deductive</td>
<td>* Adaptation is done by various media that are representative for each student. * It makes use of various types of mass-media, such as graphs, films, texts, slideshows.</td>
</tr>
<tr>
<td>MANIC</td>
<td>The model favors graphs but also information at text level</td>
<td>* Adaptation is done by various media that are representative for each student. * It makes use of graphic design and information at text level.</td>
</tr>
<tr>
<td>INSPIRE</td>
<td>Activists of Honey and Mumford type, pragmatics, theorists of the Kolb type</td>
<td>* Adaptation consists in presenting an alternative sequence of the concept. * Concepts can be represented by “examples”, “activities”, “theory”, “practice”.</td>
</tr>
</tbody>
</table>
These models display both benefits and limits and can be used for the courses that are to be facilitated in an online or blended learning program.

1. Rationale of the research

Farmer argues that if the online technologies are part of a course and they connect to the students learning preferences, then the course designers as well as the teachers/ instructors/ facilitators should be aware of the students’ learning styles in order to connect the whole design to these issues (Farmer, 1995). What the students’ learning styles are represents just one step in the process of instruction adaptation according to the learning styles. Teachers/ facilitators are invited to participate in a creative way to this process of adaptation in order to enhance faster, more natural and effective learning. Our paper aims at exploring the learning styles relevance for the blended learning programs design as well as for the new methods of adaptation to the students’ learning styles.

2. The research objectives

Our study is oriented by the following general objectives:

- Explore the relevance of the students’ learning styles for the design of the blended learning programs;
- Develop recommendations for better adaptation of the teaching strategies to the students’ learning styles in blended learning programs.

<table>
<thead>
<tr>
<th>System</th>
<th>Learning style</th>
<th>Adaptation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tangow</td>
<td>The sensing/ intuitive dimension derived from the Felder-Silverman model</td>
<td>* Adaptation consists in presenting an alternative sequence of the concept</td>
</tr>
<tr>
<td>(Paredes &amp; Rodriguez, 2002)</td>
<td></td>
<td>* Concepts can be presented by “example” “exhibit”</td>
</tr>
<tr>
<td>Curs PHP</td>
<td>Reflective - Active, Sensing - intuitive, Visual – Verbal, Sequential - Global</td>
<td>* Adaptation is done by various representations for each student</td>
</tr>
<tr>
<td>(Hong &amp; Kinshuk, 2004)</td>
<td></td>
<td>* It makes use of various types of resources such as concepts, theories, colors, text, etc.</td>
</tr>
</tbody>
</table>
3. The research sample

The participants in the study are both faculty and students from CREDIS, University of Bucharest. We explored the blended learning experiences as well as the opinions of the students and faculty about the adaptation of instruction to the students’ learning styles. Four faculty members and 42 students (graduate students from the Educational Management and School Counselling programs) accepted the invitation to get involved in the study. May we add that 50 students are enrolled in the programs out of whom 42 willingly took part in the study.

4. Research methods and instruments

In order to have a comprehensive picture of the teaching activity in the blended learning approach, we used both quantitative methods (questionnaire-based enquiry) and qualitative ones (individual half-structured interview).

- **Questionnaire-based enquiry addressed to students** regarding the identification of the learning styles. The aim of the questionnaire was to determine students to identify their own learning styles while they responded to a series of questions related to their learning preferences. This VAK model makes use of three main sensory receivers: visual, auditory, kinesthetic in order to find out what the dominant learning style is. This questionnaire is often named VAKT (visual, auditory, kinesthetic, tactile);

- **Questionnaire-based enquiry addressed to students** is another questionnaire for students that explores ideas about instruction adaptation to the students’ learning styles;

- **Individual interview addressed to faculty**: the interview was addressed to the teaching staff who facilitate learning at CREDIS, University of Bucharest. Its aim was to explore ideas concerning the importance of instruction adaptation to the students’ learning styles from the teachers’ perspective.

5. Main conclusions

Our study allowed us to summarize the main conclusions concerning the instruction adaptation to the students’ learning styles. Thus we could identify and analyse various instructional issues within the Distance Education Department CREDIS, for the master programs (School Counselling and Educational Management). The conclusions of our study are relevant and useful for our goal: the attempt to adapt instruction to the students’ learning styles.
Among faculty members in the universities of Bucharest, blended learning has become increasingly popular. The reasons to use blended learning come from the desire of faculty members to implement such programs that respond, on the one hand, to the requirements of the steady advance of online technologies that can be useful in education, as well as to the adult students’ needs, on the other hand.

Blended learning represents a learning system that reconciles both the students’ learning needs to interact in a face-to-face environment, the facilitators’ requirements to be in direct contact with those they train and the needs of the adult learners who also have families and jobs that prevent them to be present at course in the university. Nowadays, blended learning can represent a good option for the master programs in Romanian universities.

CREDIS is a distance education unit, a hybrid form of Open University, a distance version for traditional programs. CREDIS is accredited for distance education, yet not for blended learning programs. Nevertheless this department of the University of Bucharest works with unplanned blended learning components that derive from the students’ learning needs.

We should address at least the following issues in order to correctly understand and implement blended learning in Romanian universities:

• We need to correctly understand what blended learning is and means and to break free from the confusion that came into being in the universities which promoted the system in a form different from the one that is internationally agreed upon. The superficial implementation of this learning system confused students, professors as well as wider audiences who are interested in learning matters;

• We need to promote the implementation of the blended learning system by clear means such as: video simulations that present a genuine classical distance education program as well as an authentic blended learning one;

• We need to educate larger audiences about the importance of this learning system in education;

• Teaching staff both in higher education and in schools should be trained on the use of technologies in blended learning as well as on the pedagogies that lie behind this learning system.

According to the faculty members that we interviewed, the competences of the academic managerial team are crucial when it comes to blended learning.
The education of the university management is probably the first step that needs to be taken into account if authentic blended learning is to be adopted. At the same time, facilitators also need to be trained. This constitutes a priority in order to reach a reasonable standard and quality blended learning experiences.

The E-learning platform – From the interviewed faculty members’ point of view, the CREDIS platform is used only when courses take place. Requirements about the use of the platform are not mandatory – there are facilitators who visit the platform on a daily basis, both for the courses they have and for the communication with their students. Yet there are also faculty members who use the platform only when they have courses and in the latter case only when they proceed to assessments.

Navigating on the site is very fast and the possibility to interact on the forum or on the especially created collaborative spaces is easy. These elements help the students’ communication with the teachers and with the learning contents. In extra, the video or audio files that are uploaded on the platform represent a medium to conduct the learning process, according to various learning styles. This helps the attainment of the course objectives. Most of the technologies that are used on the E-learning platform, at CREDIS, are adequate for the visual and auditory students. Flash technologies, tridimensional simulations or other technologies which are highly useful for the kinesthetics, cannot be found in this department.

The tutor’s role – According to the faculty who were interviewed, some supervisors assist or should assist students, including at the administrative level. Unfortunately CREDIS does not employ these people as tutors and therefore activities are randomly and superficially carried on.

The students’ learning styles – For some of the faculty the learning styles are the ones that make the difference and not the technology. For another interviewee the learning style gets shaped within the interaction with the learning media. There are other opinions that students should be aware of their own learning styles before the face-to-face or online instruction takes place. Many students do not know what learning style they have or what are the elements that converge to learning. When these students interact with the online technologies they cannot grasp the meaning of the learning activities.
The students’ digital literacy – According to the faculty members’ opinion, the initial testing of the students is needed in order to see their technical abilities. According to the results, students should be supported with digital literacy short term courses. Yet, such a program needs extra funding and more organization from the very beginning both from the university and the students.

The students’ sample – All participant students are adults who are over 26, who work and choose these master programs to requalify, for professional reconversion or in order to continue their education. For these students the distance education system is very favorable for their career development. They are involved in diverse, productive activities and therefore cannot participate in traditional education. Many of these students could attend these courses in traditional education. Many students have fast and easy access to computers and the Internet. This allows us to conclude that their active participation on a virtual platform will not be a problem.

Course design/ adaptation to learning styles – Most courses are adapted to the online medium. A CREDIS course comprizes learning activities, self-assessment questionnaires, various tasks, requirements in order to pass to the next module. Many courses were developed in a project for rural education (the aim of which was the reconversion of teachers in rural schools). Then the courses were adapted for the online medium and became an efficient way for the students in the CREDIS master programs. The course designers could cooperate with experts in E-learning to adapt the courses to blended learning. From the faculty members’ point of view, there is just one more step for the courses to be structured and fragmented by making use of the online platform facilities.

From the students’ perspective, the courses for the traditional medium are well designed. In the teaching process, the professors take into account the students’ learning styles, their learning needs. The students positively appreciate this approach. Also the teaching methodology is varied and adapted to the students’ learning styles. The learning activities are varied, the assessment methods and instruments are adjusted to the course objectives. According to the students the face to face approach is varied and the instructors try to take into account the diversity of the learners’ styles. They also consider that the adaptation of the instructional process to their learning styles is a priority at CREDIS. It is true that this is the case only in the traditional component of their course but for them it is crucial to know that a course can be adapted to their learning needs. The adaptation to the
actual learning styles of the students in a group depends to a large extent on the ability of every facilitator/instructor to offer students the best routes to follow in the learning process.

From the point of view of the interviewees, learning is not something a teacher does for the students. They consider they are the main participants within the process, but the teacher’s role is to create the context where learning takes place. One cannot adapt to all learning styles and all learning needs, but these can be grouped so that most students could benefit from the teacher’s support and assistance. At the same time, the students should develop other learning styles and preferences because the labor market might require qualified workers in various domains who are to adapt to varied types of activities.

Considering that the CREDIS E-learning platform is used only for the communication among students, students-professors and students-tutors and not for the facilitation of learning, the adaptation of instruction does not actually exist in the online component of the blended learning system. We cannot speak of a soft selection to personalize instruction as it is the case with ARTHUR or INSPIRE, the above mentioned models. We can conclude that for the moment, CREDIS does not possess an authentic blended learning due to a number of factors. On the one hand the legal regulations do not allow such an organization, on the other hand there is also the issue of the facilitators and even the students’ abilities to work in a genuine blend.

6. Suggestions and recommendations

Our conclusions allowed us to formulate a set of suggestions and recommendations that can be addressed to both the CREDIS teaching staff and the students who are enrolled in this department.

Reassess the tutorial system – Various assistants, lecturers and senior lecturers or administrative staff work as tutors at CREDIS, which lead to overload. A reassessment of the tutorial system is needed in order to optimize communication between students and the university. Of course this is also connected to a legal framework where tutors are not included among various positions the teaching staff can hold.

Identify and address the students’ learning styles – The present study highlights the importance of addressing the learning styles throught the
Instructional process. An initial questionnaire can help us with the identification. Also, the teaching staff can support students by trying to find out their learning styles via a variety of methods: questionnaires, observation during group work. Students consider that the learning styles identification is very useful as this will help them better receive and process the course matter.

Technology – Most of the participant students are visual or auditory. There are fewer kinesthetic among them. The reduced number of students with this learning style does not lead to the reduction or the inexistence of suitable technologies such as tridimensional simulations or flash technologies (with drag and drop). An optimal framework for learning with adequate technologies to address several learning styles will be a good support for students.

Blended learning at CREDIS – For the correct implementation of the blended learning system at CREDIS it is important that the phenomenon is truly understood and the confusion that was created by a faulty implementation in various higher education organizations is overcome. At the same time it is important that the system be implemented by clear means such as: video simulations that can contrast a classical distance education program and an authentic blended learning program. Also the audience can be educated about the importance of this learning system by a variety of actions. The teaching staff as well as the students should be trained for the use of the new technologies in a blended learning system and the underlining pedagogy. This should be a priority on the decision makers’ agenda.

Instructional design according to the students’ learning styles – We appreciate that CREDIS has made efforts to develop courses that are adequate with the requirements of a distance education program, yet for a blended learning system implementation more steps need to be taken such as the structuring and fragmentation of the courses by making use of the online facilities.

Personalized instruction – Even if initiatives to implement an authentic blended learning at CREDIS are at the beginning, we suggest that throughout the development of this process personalized instruction models should be used in order to address a variety of learning styles that the enrolled students might possess.
REFERENCES


