RECOGNIZING PERSONAL LEARNING STYLES AND USING LEARNING STRATEGIES WHILE LEARNING ENGLISH IN AN ELECTRONIC ENVIRONMENT

Radka Juřičková

VSB-TUO Ostrava
radka.jurickova@vsb.cz

Abstract

This paper describes the development of language skills among academics of VSB-Technical University of Ostrava in an LMS Moodle e-learning environment with regard to individual learning styles and strategies while learning a foreign language. A student's individual learning style plays an essential role in effective foreign language acquisition, therefore recognizing their own learning style and using the right strategies to reinforce their particular curriculum can lead to effective learning. The Department of Languages at the VSB-Technical University of Ostrava has decided to implement e-learning forms of education into English Language Teaching (ELT) in the form of optimized adaptive e-courses.

The paper describes the objective of providing an optimized adaptive e-learning environment respecting preferred learning styles with a narrower focus on the perceptual preferences (VAK) of the presented curriculum and with regard to recommended learning strategies to be used while learning. This e-learning environment is being developed in accordance with the Common European Framework of References for Languages and its key language competences divided into two main categories: receptive skills and productive skills.

Introduction

Due to the changing environment of education in terms of using new technologies, particularly information technologies, and their possibilities, our department has no choice but to react to this situation by accepting the role of Information and Communication technologies in the educational process and by making the best possible use of them. In February 2012, as a response to the current situation, we launched the first part of thematically oriented e-learning courses in the LMS Moodle environment for each individual faculty of the university (seven faculties). Before the launch and in gradually implementing the entire e-course we had several basic questions to answer:

1. Who exactly is the target group of future e-learning participants and how can the complete concept of e-learning courses in terms of content, language methodology, and language competencies as described in CEFR be organized?

2. How can the success and usefulness of e-learning be ensured in practice?

3. How can English for specific purposes be taught more effectively? What can be done better?

4. Would optimized e-learning courses respecting learning styles and strategies lead to more effective learning of ESP?

In looking for all these answers, we had to consider the fact that the learner stands at the center of our attention, and with all the possibilities of ICT we have to provide a learning environment suitable to the student´s professional needs, individual learning style, perceptual preferences, learning strategies and the ability to learn at their own pace, while at all times taking into account new trends in the field of ICT in education.

Cohen and Weaver (2005) describe and divide "language learning strategies" as conscious processes used to learn a language while "language use strategies" are conscious processes selected to use the material that is learned (however incompletely). Garrison (2011) suggests the goal of e-learning in the 21st century is to provide a framework for understanding the application of e-learning in higher education. In his work he outlines the challenges of exploring and understanding the potential of e-learning, makes the point that e-learning is not just another learning technology, and believes it will transform teaching and learning respectively. Cohen (2011) draws attention to issues of theoretical debate and demonstrates how case study research can contribute to understanding the process of language learning where he explains that viewing strategies in isolation is not as beneficial to learners and instructors alike viewing them at the intersection of learning style preferences, motivation, and specific second language tasks. E-learning has the potential to provide "student-centered learning" and tends to be designed based on the pedagogy of providing learning environments according to the students' needs, abilities, preferences and styles rather than providing uniform education without any consideration of individual needs and differences (Nishino et al, 2010). Another approach in the form of an adaptive environment represented by a virtual teacher adapted to the individual type of student has recently been introduced (Kostolanyová, Šarmanová and Takács, 2011a). In further work they have even introduced a new methodology of creating and formulating expert's rules to assign the learning style of a student to suitable teaching styles of the virtual teacher (Kostolanyová, Šarmanová and Takács, 2011b).

Over the years, numerous approaches have been used for conducting research into language learner strategies. Oxford

(2011) provides an updated discussion of both quantitative methods involving experimental, quasi-experimental, and non-experimental research, and qualitative methods involving phenomenology, grounded theory, case studies, ethnographies, and narratives, all of which we have found very inspiring for our project.

In light of all the references mentioned above, question 4 has become the focus of our attention.We have divided the whole concept of e-learning courses into three phases followed by intended research and pedagogical experiment. Each phase consists of five different units and one review test. The whole course ends with a Final Progress Test covering all 15 units for each individual faculty. The overall concept of courses and units (105 units, 21 Review Tests, 7 Final Progress Tests) has been completed and preliminary evaluation results will be described and discussed here. We are intensively working on the following phases of optimization which will be put into effect in April 2013 and May 2013 respectively. In this paper, we outline research steps included within the phase of optimizing the e-learning environment. Currently (March 2013), we are assessing the reaction and satisfaction of participants from all courses and the results will be reflected in the design of optimized e-learning courses for ESP learners at the university level of education.

This paper aims to introduce an approach to teaching English for Specific Purposes (ESP) at the VSB-Technical University of Ostrava through its Department of Languages. Using various forms of e-learning and viewing the process of learning a second language as a comprehensive approach including motivation and self-discipline, we intend to verify, optimize and finally implement these new forms of education into the practice of teaching English for Specific Purposes, mainly in technical fields.

Materials and Methods

Professional content: English for Specific Purposes

To fulfill one of the most important criteria, the professional content of English for Specific Purposes, we intensively cooperated with experts from individual faculties of the VŠB-Technical University of Ostrava, which consists of seven faculties:

- Faculty of Economics
- Faculty of Civil Engineering
- Faculty of Mechanical Engineering
- Faculty of Electrical Engineering and Computer Science
- Faculty of Mining and Geology
- Faculty of Safety Engineering
- Faculty of Metallurgy and Materials Engineering

The topics to be prepared for an electronic environment in the form of e-courses and e-lessons were specified by deans, vice-deans, assistant professors or doctoral students to ensure a direct link to the major fields of studies or to the content of major subjects. Such themes or specified topics from various foreign sources were further presented to ELT experts (English Language Teaching), and the creators of the e-lessons (units). Their task was to create and form units with respect to the fundamental methodology of e-learning and blended learning, as well as with respect to Common European Framework of References for Languages and its key language competencies.

The theory of learning styles of a student while learning EFL/ESL (English as a foreign language or English as a second language), and recommendation of language learning strategies and with assistance from Information and Communication technologies, especially LMS Moodle and its technical possibilities, were also taken into consideration.

All these important factors played a significant role in the process of the project/system development life cycle using the ADDIE Model (Analyze-Design-Develop-Implement-Evaluate) as shown in Figure 1. Methodology of development for information systems (IS) is a summary of stages, approaches, policies, procedures, rules, documents, methods, techniques and tools that covers the entire life cycle of IS. The methodology determines what needs to be done, when, by whom, and why, not only during the process of development, but also during the operation of the IS (Klimeš, 2010).

Figure 1: System development life cycle- ADDIE Model

We have evaluated the results from the whole process, modified necessary parts, designed new parts and are currently working on an optimization, taking into account the acceptance of users' comments expressed via an evaluation questionnaire with a further focus on pedagogical experiment using the technique of parallel groups (Chráska, 2007). Further parts of the whole project will consider requests or suggestions of both students and teachers with the aim of creating a user-friendly learning environment for modern EFL/ESL studies of applied languages.

Common European Framework of References for Languages (CEFR)

When trying to respect the Common European Framework of References for Languages and the development of language competences described as skills, we came across some technical problems in terms of the LMS Moodle environment and its possibilities. Throughout the work, we had to bear in mind the limitations of LMS Moodle (version 1.9 at the beginning of whole project and version 2.3 available now), even with some implementations of external software which will be described later in the section entitled Technical Solutions. Basically, we were limited by the number of exercises and their variations, which made it difficult to fulfill all areas of language skills development.

Language skills are divided into three main areas. They are categorized and described as skills and are the subject of development by each student individually (Ivanová et al, 2006):

Understanding	*reading and listening*
Speaking	*interaction and production*
Writing	*general or professional*

Table 1: Language Skills by CEFR (simplified version)

We had to choose the types of activities and exercises that are feasible in the selected LMS Moodle environment even without the direct participation of a tutor and where an automatic evaluation with immediate feedback is applied. It mainly proved to be appropriate in the development of understanding skills (the understanding of reading and listening) implemented in the electronic environment.

In the area of development of speaking skills (interaction and production) we tried, at first, to cover speaking production skills with the possibility of self- recording and comparing pronunciation with a native speaker (even the storage of one´s own recordings and comparing them later to see if they have developed is possible). We are now trying to cover the area of speaking interaction development as well. We are currently and intensively working on the possibilities of implementation of other communication tools into the environment of LMS Moodle, such as Skype (video/audio chat) or other social networks to be able to put synchronous communication into action in real time, mainly for the purpose of the intended experiment. At this point asynchronous communication among all participants including tutors is possible in the form of Chat, Moodle Mobile, Forum, Blog, and Notes or simply via e-mail if necessary. We have also applied the form of blended learning and have implemented these e-courses into the curriculum of the subject "English for Engineering" taught in its present form to our full-time students, where a total of three tutorials during one semester were carried out and where face-to-face communication was possible.

The area of writing is now covered in the form of gap fills, writing words or letters again considering the possibilities of the automatic evaluation of such an activity. Other communication tools involving writing without automatic evaluation are also available. To develop real writing skills would involve the intensive participation of a tutor skilled in this area of ELT and therefore we are preparing another e-course aimed especially at writing for academic/scientific purposes. In such a course, writing activities would play a primary role and would provide our students with rules and tips on how to write a conference paper, for instance. The target group for this would mainly be doctoral students of our university.

All the submitted study materials in the form of the e-lessons for each unit are graded according to the standards of CEFR Levels A1-C2. However, a minimum level of A2/B1 is required to be able to understand the core of a unit, to be familiar with the terminology of a presented topic, and to be successful in making any progress. Due to the level of difficulty in the field of English for Specific Purposes, these e-courses are not suitable for beginners.

Learning Styles Preferences - the value

In designing and creating optimized e-learning courses, individual differences and learning style preferences are taken into account. In professional literature aimed at ELT, especially aimed at the EFL/ESL field, perceptual preferences are researched and described as the most significant indicator. According to Oxford (2003), learning styles are described as general approaches that students use in acquiring a new language (e.g. global or analytic, visual-auditory-kinesthetic/ VAK, etc.). While learning a new language, sensory preferences in particular determine the general direction of learning approaches.

Cohen and Weaver (2005) describe the value of learning styles in their research and suggest that the greater number of styles students can use the more successful they will be at learning a

new language. Research also shows that we all have learning style preferences and thus may tend to favor our preferred approaches in learning.

Cohen and Weaver (2005) also suggest that when it comes to learning new vocabulary, students who learn visually may benefit from seeing a still picture of video of an object or action which involves the new vocabulary in some way; learners with auditory preferences may want to hear the words pronounced clearly several times or to hear themselves pronouncing them, and would benefit from any audio parts in the process. They also are more capable of using the words in real situations involving speaking. For kinesthetic learners it may help to perform the action or do any movement, even moving lips, fingers or any other parts of body in helping them to better remember new words. We are, therefore, working on the implementation of other ICT tools into LMS Moodle to enhance this preferred way of acquiring new vocabulary and to increase the number of possible activities for this type of student.

Other psychological and linguistic studies (Lojová and Vlčková, 2011); (Ehrman, Leaver and Oxford, 2003) also lead to classification according to perceptual preferences, which substantially affect access to information, its reception and recall. In the process of studying EFL/ESL internal images are connected with linguistic entities and very often a combination of two or more styles is used. Despite this fact, for the vast majority of learners, one learning style is more or less preferred.

Language Learning Strategies - the tool

There are two key factors affecting the process of learning a language. The first is the preferred learning style; in the field of learning a language perceptual preferences mainly dominate the process of approaching the language. The second is the

language learning strategy or strategies used to enhance the language learning. These main factors influence the student's ability to learn in a particular instructional framework and help to determine how and how well students learn a second or foreign language.

Learning strategies are defined as specific actions, behaviors, steps, or techniques (e.g. seeking out conversation partners) used by students to enhance their own learning (Oxford, 2003).

Mareš (1998) describes learning strategies as one part of a large-scale process where students make a particular plan in a distinctive way for solving a given task when they try to achieve something and to avoid something else resulting in learning, as shown in Figure 2.
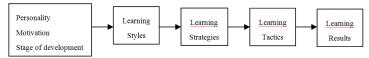

Figure 2: The relation model of individual differences and learning process, (Schmeck in Mareš, 1998)

When the learner consciously chooses strategies that best suit their learning style (mainly VAK in languages), these strategies become a useful and powerful tool for an active, conscious and self-regulated process of learning the language.

According to Oxford (2003) and Cohen and Weaver (2005), learning strategies while learning a second language can be classified by function:

1. *Cognitive strategies* enable the learner to manipulate the language material in direct ways, e.g. through reasoning, analysis, note-taking, summarizing, synthesizing, outlining, reorganizing information to develop stronger schemes (knowledge structures), practicing in natural

settings, and practicing structures and sound formally.

2. *Metacognitive strategies* (e.g. identifying student's own learning style preferences and needs, planning for foreign language task, gathering and organizing materials, arranging a study space and schedule, monitoring mistakes, and evaluating task success) are employed for managing the learning process overall. Metacognitive strategies have an executive function over cognitive strategy used.

3. *Memory-related strategies* help the learner link one second language item or concept with another but do not necessarily involve deep understanding. Various memory-related strategies enable learners to learn and retrieve information in an orderly string (e.g. via acronyms, sounds, images, a combination of sounds and images, body movement, mechanical means or location).

4. *Compensatory strategies* help the learner make up for missing knowledge (e.g. guessing the meaning from context of listening and reading, using synonyms or gestures.

5. *Affective strategies* help students regulate their emotions, motivation, and attitudes and are often used to reduce anxiety and provide self-encouragement. Research shows that learner's self-motivation capacity is a major factor contributing to success.

6. *Social strategies* involve learners' choice to interact with other learners and native speakers, such as asking questions to clarify social roles and relationships, asking for an explanation or verification, and cooperating with others in order to complete tasks.

Language learning strategies can also be classified by language skill area, which includes the *receptive skills* of listening and reading and the *productive skills* of speaking and writing-

skills needed for using second language successfully in any professional area. To recommend possible learning strategies feasible in electronic environment, we had to modify the arrangement of Table 1 into Table 2.

From a pedagogical perspective the fact that language learning strategies are flexible, learnable and when compared with learning styles can be easily changed or developed is important. Strategies used are influenced by many variables (i.e. age, gender, language level, preferred learning style, motivation, experience of strategies, etc.) and because we are working with adults at the university level of education, certain strategies will be practiced or recommended throughout our experimental e-learning course. From the previous phases of this project and research, we have discovered that most of our academic staff participating in some way in this project are not sure or aware of the existence of theories of learning styles and learning strategies but have been using them either intentionally or accidentally. In this paper we extend the information from Juříčková (2012) with the introduction of a new design and model of an optimized adaptive e-learning environment by adding new features and functions, mainly by shifting towards language learning strategies where we aim to make the process of learning more effective and user-friendly.

ERIES Journal

Skill area	Skill	Recommended strategies in electronic environment
Receptive skills	listening	Listen to audio materials (with/out text script) Watch video materials (with/out subtitles) Visit other related websites/sources
	reading	Read as much as possible about the topic of your study/interest Skim the text first to get the main idea Scan the text to find the specific piece of information Read for detail Use dictionary Read for pleasure
Productive skills	speaking	Practice saying new expressions Record and compere your pronunciation with native speaker Use tools for conversation in electronic environment Ask questions Answer any questions Encourage others to correct you Try to express your idea Use synonyms if you can't think of the proper word
	writing	Practice writing new words Keep a glossary Record important collocations, prepositions, synonyms Take notes in the language Use patterns of writing Use dictionary Use revision tools Try to get feedback
All skills	translation	Translate in your head to/from language Translate parts of conversation Think in the target language Try to understand the context instead of word for word Make a plan when translating any written work Use dictionary

Table 2: Language skill areas and recommended strategies

Results

Optimized e-course

In our optimized e-courses we intend to help our students/participants to discover their individual learning preferences with a narrower focus on discovering their perceptual preferences while learning a second language and to expand or widen their learning approaches and to recommend suitable learning strategies. Knowing their own learning preferences should help them to study EFL/ESL successfully. When using ICT while teaching or learning EFL/ESL, sensory receptors dominate the process, which is why these dimensions occupy the center of our interest.

Perceptual style dimensions:

- *Visual (ICT + eye):* learning best through visual means- text based resources, spatial information such as charts, diagrams, pictures, flashcards schemes, videos, and other verbal sources
- *Auditory (ICT + ear):* preferring listening and speaking activities- audio activities, recordings, reading aloud, read-listen-describe, dictations, dialogues, discussions
- *Kinesthetic (ICT + hands-on):* benefitting from any possible movement, using keyboard or mouse, moving objects, doing projects, cooperating with others, also saying things aloud and writing into the texts, drawing schemes or maps

When enrolling onto an e-course, a valid diagnostic questionnaire will be applied (Cohen and Weaver, 2005), followed by a description of the information acquired and further recommendations on how to work within the e-course with respect to the results of the questionnaire. Figure 4 shows the proposed scheme of the optimized e-course containing 15

units, dividing a complete e-learning course into three phases, or modules. Each module (1, 2, 3) consists of five different units and one review test. To continue to the next module, students need to get at least 60% in the review test. If they do not get 60% they will be advised which parts to revise before taking the test again. The course ends with a final progress test covering all 15 units for each individual faculty. Figure 5 shows the scheme of an individual e-lesson with its individual parts according to the fundamental pedagogical rule of presenting the material to practicing acquired information, transferring it to knowledge and finishing the unit with a self-check and unit test. Figure 6 presents a detailed view of the exercises part of a unit within the process of learning, knowing the student's learning styles and respecting recommended strategies. The optimized e-course will provide three different versions of study material, which is especially important in the practice part of the unit. In the practice part in particular, participants will be able to learn the language the way they perceptually prefer and will be instructed about the strategies they should use to further develop the language being learned. In the review test, they will find a combination of the presented material that they will come across in their field and in real life.
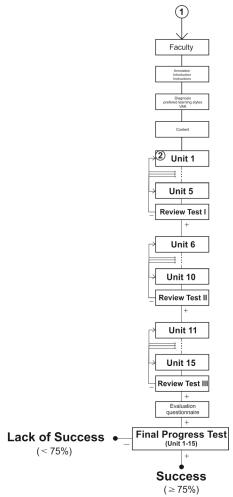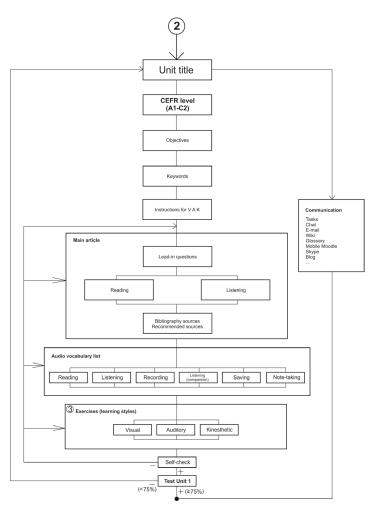

Figure 4: Flow chart of optimized e-course
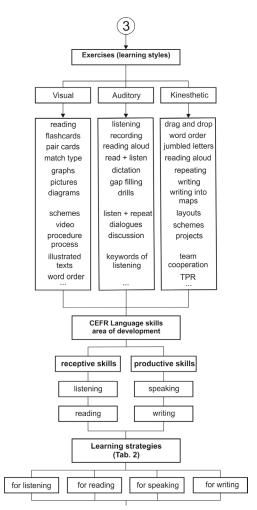
Figure 5: Flow chart of optimized e-lesson

Figure 6: Optimized part of language acquisition

Discussion

Aspect of motivation

Since February 2012 all of the e-courses have been running and we have registered 347 participants in total (up to February, 2013). Table 3 shows the number of participants at each faculty who are willing to develop their language competencies for their professional career in their free time. All of these courses are optional and therefore self-motivation and self-discipline play essential roles in the process. As we can see, the greatest interest in this form of language development is indicated by academics of the Electrical Engineering and Computer Science faculty (55), followed by the Faculty of Economics (53) and the Faculty of Mining and Geology (53). Those are the faculties we will focus on closer by doing analyses obtained from the reports and statistics from LMS Moodle, and if they are indeed the most active and interested, they will become our new target group for the intended research and experiment. This aspect will cover the area of necessary motivation and self-discipline, which is absolutely essential for any form of e-learning activity or education.

Faculty	Number of participants
Economics	53
Civil Engineering	33
Mechanical Engineering	51
Electrical Engineering and Computer Science	55
Mining and Geology	53
Metallurgy and Materials Engineering	52
Safety Engineering	50
Total	347

Table 3: List of registered participants by faculty

In the process of preparing the intended optimized e-courses and their subsequent implementation we are already considering a future evaluation and expecting an update of both forms and topics. We also intend to further align the selected topics with individual fields of study to their professional needs where we already are discussing the possibility of a direct link to topics and themes for the degree examination, at least within a common basis for all disciplines. According to Kučírková, Vogeltanzová and Jarkovská (2011) the development of vocabulary that can be applied in business and economics (or other specific field in our case) is of primary importance. By learning and practicing specialist vocabulary the students more or less receive a guide, or a key about how to perform other activities like speaking, reading, writing and last but not least, listening. However, in accordance with the results of an experiment carried out by Kučírková, Vogeltanzová and Jarkovská (2012), we intend to prove that optimized e-learning will have a significant impact on language acquisition.

At the forefront of our interest is also the language development and training of young doctoral students, new academic staff and the development of their "Academic Skills". If we can prove that this approach (a combination all the above mentioned key factors - ESL/EFL, student´s learning styles, CEFR, ESP, and e-learning methods) leads to a greater efficiency and the improvement of EFL/ESL teaching, this method can be applied to other languages taught at the Language Department of the VSB-Technical University of Ostrava, such as German, Russian, French, Spanish or Czech for Foreigners. Even the Chinese language is now available at the department in the form of full-time course in response to to the current needs in the globalized

economy. Achieving this aim could lead to a recommendation for application of the model to other teaching institutions as well.

The outcome of this research should either prove or disprove the hypothesis that optimized e-learning methods and forms of studying foreign language in accordance with individual learning styles while learning foreign language has a positive and significant impact on the development of language competencies.

We are currently working on our first statistical analysis and from the results we expect to discover the most common type of student with regard to their preferred sensory perceptions and to further focus on that specific group of students to either prove or disprove the hypothesis. At this point (April 2013), we are monitoring all the activities of all enrolled students with the tools available for administrators of the courses and will further analyze the gathered data in detail.

Technical Solutions

To be able to carry out the proposed types of exercises and activities while working with LMS Moodle (2.3 version) we implemented several external software applications. For audio features, we used Java Applet, and for some other activities we used elements from the programs "Hot Potatoes from Half-Baked Software" and "Wordle™" and Skype. For video activities a flash player and speakers are needed, and a headset with microphone for speaking and recording. For intended optimized e-courses a web camera will also be an important feature.

Conclusion

To achieve the desired results we suggest taking into account the learning methods, materials, tools and environment which suit a student's learning style, and their preferences at least in the presentation and practice areas of language acquisition in order to develop their language skills effectively. Feasible language learning strategies were also introduced in the form of recommendations. All possible activities need to be done frequently or as often as possible. Therefore we stress that self-motivation and self-discipline are essential for achieving any possible success in learning a second language. Recognizing the preferred learning style, using recommended strategies and the student's personal input should lead the student towards the desired accomplishment.

In this paper the issue of ESP and EFL/ESL at the Language Department of the VSB-Technical University of Ostrava was introduced. English today is viewed and accepted as a *lingua franca* in today's globalized world and is used with overwhelming dominance as a tool for communication. For our graduates entering their professional careers, the improvement of language skills is an absolutely necessity. This fact has led to the expansion of ICT into all subjects taught, English included, and these tools are playing and will play a significant role in the learning process. LMS Moodle is an open-source tool and its development will continue. In other words, we can look forward to new possibilities and challenges to face in the near future.

Acknowledgements

References

Chráska, M. (2007) *Metody pedagogického výzkumu*, Praha: Grada.

Cohen, A.D. (2011) *Strategies in Learning and Using a Second Language (2nd ed.).* Harlow, UK: Longman/Pearson Education.

Cohen, A.D.; Weaver, S.J. (2005) *Styles and Strategies-Based Instruction: A Teachers´ Guide.* University of Minnesota: CARLA.

Ehrman, M. E.; Leaver, B. L.; Oxford, R. L. (2003) *A brief history of individual differences in second language learning.* System 31: Elsevier Ltd.

Garrison, D.R. (2011) *E-learning in the 21st Century*. New York: Routledge.

Ivanová, J.; Lenochová, A.; Linková, J.; Šimáčková, Š. (2006) *Společný evropský referenční rámec pro jazyky*. Olomouc: UP.

Juříčková, R. (2012) „Optimizing the Teaching of a Foreign Language in Regards to Student Learning Styles and E-Learning", *Efficiency and Responsibility in Education (ERIE 2012) 9th International Conference Proceedings*, Prague, pp. 203-212.

Klimeš, C. (2010) *Informační systémy a jejich projektování.* Ostrava: OU.

Kostolanyová, K.; Šarmanová, J.; Takácz, O. (2011a) "Classification of Learning Styles for Adaptive Education", *New Educational Review*, vol.23, no.1, pp.199-212.

Kostolanyová, K.; Šarmanová, J.; Takácz, O. (2011b) "Structure of Study Supports for Adaptable Instruction", *New Educational Review*, vol.25, no.3, pp.235-247.

Kučírková, L., Kučera, P., Vostrá Vydrová, H. (2012) "Study Results and Questionnaire Survey of Students in the Lessons of business English e-learning course in Comparison With Face-to-face Teaching", *Journal on Efficiency and Responsibility in Education and Science*, Vol. 5, No. 3, pp. 173-184.

Kučírková, L.; Vogeltanzová, T.; Jarkovská, M. (2011) *"Business English Courses Online Support"*, Journal on Efficiency and Responsibility in Education and Science, Vol. 4, No. 4, pp. 197-206.

Lojová, G.; Vlčková, K. (2011) *Styly a strategie učení ve výuce cizích jazyků*, Praha: Portál.

Mareš, J. (1998) *Styly učení žáků a studentů*, Praha: Portál.

Nishino, K.; Shimoda, T.; Iribe, Y.; Mizuno, S.; Aoki, K.; Fukumura, Y. (2010)" Predicting e-Learning Course Adaptability and Changes in Learning Preferences after Taking e-Learning Courses" *Lecture Notes in Computer Science (including subseries Lecture Notes in Artificial Intelligence and Lecture Notes in Bioinformatics)*6277 LNAI (PART 2) , pp. 143-152.

Oxford, R. L (2003) *Language Learning Styles and Strategies: an Overview.* Oxford: Gala.

Oxford, R. L. (2011) *Teaching and Researching Language Learning Strategies*, Harlow, UK: Longman/Pearson Education.