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Psychological foundations of e-learning implementation in a second language acquisition

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ABSTRACT

In modern psychological and pedagogical sources various approaches to teaching a foreign language are presented, which is considered as a means of developing professional competence. At the same time, there is a lack of systematic psychological and pedagogical research papers of the conceptual foundations of the L2 acquisition using e-learning technologies. Implementation of e-learning as the instrument and the tool for L2 acquisition (in our research Maritime English acquisition) can be successful under different psycho-pedagogical conditions. We offer own model of psycho-pedagogical conditions of effective e-learning. This model includes the basic psychological and pedagogical theories, which are the basis for implementation of e-learning. The psychological processes involved in this type of educational technology are defined. The main contribution of our study is the finding of psychological barriers to effective adaptation to e-learning. We offer practical recommendations to teachers of a foreign language who are just beginning to introduce this technology into the educational process.

1. Introduction

Educators are constantly looking for the ways to facilitate the process of learning. Some features of marine education (many hours of students' absence in the lecture room because of being on a shipboard training) forces the educators to implement technologies of self-education and the ways to improve teaching effectiveness in the lecture-room. One of such techniques is e-learning. The IMO has established a minimum level of skill and knowledge of English in use. This minimum is included in the training code, Seafarers Training, Certification and Watchkeeping Code 1978/95; whereby this code establishes that the member governments are responsible for the seafarer's acquisition of the minimum level of English. Generally, teachers of Maritime English use The Internet as the access to authentic resources as Conventions, Manuals, Codes, Memorandums and other documents provided by IMO. Nevertheless, the opportunities of e-learning for L2 learning are much wider. The lack of psycho-pedagogical literature on the implementation of e-learning for Maritime English teachers forced us to write this article.

E-learning is often understood differently by educators. Many terms have been used to define e-learning in the past. For example: web-based training, computer-based training or web-based learning, and online learning are a few synonymous terms that have over the last few years been labeled as e-learning. We summarized major trends of defining the notion of "e-learning". Firstly, we referred to dictionaries and then to scientists' considerations.

E-learning – learning done by studying at home using computers and courses provided on the Internet (https://dictionary.-cambridge.org/dictionary/english/e-learning) E-learning – learning conducted via electronic media, typically on the Internet. (https://en.oxforddictionaries.com/definition/us/e-learning).

Learning which takes place by means of computers and the Internet. (https://www.collinsdictionary.com/dictionary/english/e-learning)

The American Society for Training and Development (ASTD) defines e-learning as a broad set of applications and processes which include web-based learning, computer-based learning, virtual classrooms, and digital. The definition of e-learning varies depending on the organization and how it is used but basically it involves electronic means of communication, ed-

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ucation, and training.

We support the definition that e-learning is the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as remote exchange and collaboration" (Alonso et al., 2005).

In today's world, learning needs change very quickly and the concept and functions of e-learning must continuously be adapted to these needs. The definitions gathered from the literature review focus on different elements of e-learning. Specifically, four general categories of definitions are identified:

1) technology-driven,
2) delivery-system-oriented,
3) communication-oriented, and
4) educational-paradigm-oriented.

According to Pritchard (2004) we can find six different kinds of Internet information sources for Maritime English e-learning:

- Maritime Education and Training (MET) institutions websites, such as maritime universities, colleges, academies, maritime training centres, etc.
- Websites of international organizations in the maritime sector such as International Maritime Organisation or International Labour Organisation,
- Commercial software developers, for example Videotel, Seagull or Marlins.
- Individual websites developed by maritime English teachers such as the one maintained by Professor Van Kluijven (http://home.planet.nl/~kluijven/).
- Various pages on the websites of shipping and crewing companies.
- Individual websites run by former masters, maritime lexicographers, boat designers and other people with various interests in maritime trade.

To get the most out of the online learning experience both the teacher and the student should take full advantage of the vast amount of resources that are available online. There are hundreds of online services that offer access to information. You may try the website IMET, dedicated to everyone who wants to practice Maritime English. The material is prepared for seafarers, trainees, students of Maritime Schools and people who would like to prepare for their exams and who generally want to expand their vocabulary and improve grammar. http://www.imet.fc.pl/

Available recourse material permits to use new information and communication technologies based on computer use: Internet access, electronic mail, chat, forum and video conference. But teachers encounter some psychological barriers implementing e-learning in their teaching process. In our opinion, understanding theoretical basis of e-learning technologies, psychological barriers and didactic opportunities of teaching with the use of electronic devices and the Internet will help the L2 teachers improve their teaching competence.

2. Methodology.

The characteristic features of implementation of e-learning in a higher educational establishment is influenced by:

– a field of education in the higher establishment;

– policy of the higher establishment towards new technologies, its financial possibilities;

– a subject of learning and traditions of the department which provide its teaching;

– the country where higher establishment is situated.

These factors will justify the frequency of the use of learning by means The Internet and electronic devices in the lecture room and differences in the intensity of its implementation. That is why we emphasize, that we research the features of e-learning providing Maritime English teaching.

Our purpose is to make psycho-pedagogical recommendations to the teachers of Maritime English for the application of e-learning technologies into practical teaching activities.

Methods we used:

1. Observation of psycho-pedagogical literature to widen a theoretical basis of the possibilities of introduction of the newest technologies in the program of language training of students and the theoretical substantiation of expediency of the use of e-learning technologies.

2. Analyses of students' and teachers' interviews concerning their attitudes to e-learning to find out psychological barriers of e-learning implementation. The respondents were the students of The Institute of Water Transport of The State University of Infrastructure and Technologies and the teachers of Maritime English of the same university. We conducted 30 interviews among the students of navigation and engineering departments and 10 lectures of different age and teaching experience.

3. Theory.

The following theories were the basis for interpretation of our observations:

1. L2 learning theories from psychology and psycholinguistics (e.g. input processing, the notion of knowledge)

2. Behaviorist theory (Thorndike (1913), Pavlov (1927), and Skinner (1974) Behaviorists claim that observable behaviour indicates whether or not the learner has learned something,.

3. Cognitive learning theories. (Craik & Lockhart, 1972; Craik & Tulving, 1975), (Ausubel, 1974). Cognitivists see learning as an internal process that involves memory, thinking, reflection, abstraction, motivation, and metacognition.

4. Constructive theory. Constructivist theorists claim that learners interpret the information and the world according to their personal reality, that they learn by observation, processing, and interpretation, and then personalize the information into personal knowledge (Cooper, 1993; Wilson, 1997). Learners learn best when they can contextualize what they learn for immediate application and personal meaning. Constructivists see learners as active rather than passive. Knowledge is not received from the outside or from someone else; rather, the individual learner interprets and processes what is received through

the senses to create knowledge. The learner is the centre of the learning, with the instructor playing an advising and facilitating role. Learners should be allowed to construct knowledge rather than being given knowledge through instruction (Duffy & Cunningham, 1996). The construction of knowledge includes both physical and intellectual learning activities (Phillips, 2005). A major emphasis of constructivists is situated learning, which sees learning as contextual (Hung, Looi, & Koh, 2004). Learning activities that allow learners to contextualize the information should be used in online instruction. If the information has to be applied in many contexts, then learning strategies that promote multi-contextual learning should be used to make sure that learners can indeed apply the information broadly. Learning is moving away from one-way instruction to construction and discovery of knowledge (Tapscott, 1998). In his transformation theory,

5. Connectivism (Downes, 2006; Siemens, 2004). According to Siemens, connectivism is the integration of principles explored by chaos, network, complexity and self-organization theories. Due to the information explosion in the current age, learning is not under the control of the learner.

6. Language in social contex (Vygotsky's theory) Social psychological differences of L2 learners were studied by Gardner (1985), Skehan (1989), and Ellis (1994). (Gallivan, Spitler, and Koufaris (2005). We follow activity theory of Vygotskyi, the idea that new language knowledge arise in the course of social interaction. There is a zone where learning can take place productively but desired outcome will be obtained when scaffolded help is given. (Zone of Proximal Development). Neo-Vygotskian developed the idea of scaffolded help and defined its functions: recruiting interest in the task, simplifying the task, maintaining pursuit of the goal, making critical remarks on the differences between the obtained and ideal solutions, controlling frustrations, demonstrating the idealized version of the solution.

4. Psycho-pedagogical literature about features of e-learning.

Many authors agree that computers in education have made considerable inroads into the learning environment of students and foreign language teaching in particular, thus creating a new means of knowledge acquisition. By using computers students can develop their own ideas and apply their knowledge with more self-confidence (Gallego & Alonso, 1999). Generally speaking there are two main ways of looking at utilizing computers for language teaching and learning: "computer as tutor" or "computer as tool". The essential difference between them is that the first assesses student's answers, while the second does not (Taylor, 1980). We could add to this that the use of computers as a tutor is more common in self-paced learning situations, and its use as a tool is more common in ordinary and distance education contexts. Several authors (Assel, 1995, Cantos, 1995, Ruipérez, 1995) agree that the motivational factor is the main advantage of computer use for language learning and teaching. As a result students spend more time doing the exercises, if these are interactive, and the student's active participation on the proposed task is consequently greater.

As we can see, scientists accept the positive role of e-learning in the process of teaching.

In maritime industry the formation of international crews is a common practice. Therefore, researching the possibilities of e-learning for Maritime English teaching we would like to make some generalizations for different countries. Our interest was attracted by the research of Seafarers International Research Centre (Cardiff University) about the differences of new technologies use by seafarers of different nationalities. They found that when different forms of learning are grouped into 'self-learning', 'specific training', and 'both' we find significant differences between nationalities. European seafarers are much more likely than some other groups to fall into the 'self-learning' category. Thirty-nine percent of Europeans had acquired their knowledge of computers via 'self-learning' as compared with 32% of ASEAN seafarers, 29% of 'other nationalities', 24% of Chinese respondents, 22% of Indians, and 20% of Filipino seafarers. (ASEAN (Association of Southeast Asia Nations) (Sampson, H. and Tang, L. (2011). The main conclusion we draw from this research is that cultural factor will influence the adoption to e-learning.

We studied different views of scientists and teachers on e-learning but the attitudes of students (learners) are of great importance. In this respect the research on the students' preferences concerning material on line and printed material will make us to some conclusions. Most of the students said they preferred a web page or a computer programme over books, but they still thought that the written word was the best way to gain knowledge. The students wanted a total experience from their course material, with the texts being shorter and including a better overview, and being enhanced with video, sound, interactive tests and games. They also wanted their course material to be integrated with social media so they could stay connected with their peers and teachers, and they wanted their teachers to be able to update the material (Stoop, J, Kreutzer, P and Kircz, J G (2013). This result proves that e-learning cannot replace face-to-face learning and the use of blended learning can realize students' desires.

The other point can be also considered as a barrier of e-learning. The students read the text on paper and digitally. The assessment of the reading comprehension showed that the students who read on paper scored significantly better than those who read the texts digitally. It was easier for those who read on paper to remember what they had read. Mangen et al. say that this is because paper gives spatio-temporal markers while you read. Touching paper and turning pages aids the memory, making it easier to remember where you read something. Having to scroll on the computer screen makes remembering more difficult (Mangen, A, Walgermo, B R and Brønnick, K (2013). (Definition of "e-learning" from the Cambridge Advanced Learner's Dictionary & Thesaurus © Cambridge University Press) (Definition of "e-learning" from the Cambridge Advanced Learner's Dictionary & Thesaurus © Cambridge University Press) (Definition of "e-learning" from the Cambridge Advanced Learner's Dictionary & Thesaurus © Cambridge University Press)

Another important feature of motivation is highlighted by

the training literature, which reminds us that learning is not merely an individual cognitive activity, but occurs in the social world and is shaped by social conditions (Gallivan, Spitler, and Koufaris 2005)

Another important feature which will influence e-learning adoption is individual differences and learning styles. Learning style refers to how a learner perceives, interacts with, and responds to the learning environment; it measures individual differences. Different learning style instruments are used to determine students' learning styles. Thus, awareness of own learning style will help the student to choose the appropriate resource of information (an exercise, a video film, e-book etc.) and an electronic device (a cell phone, a tablet, a computer etc.).

When learning online, learners should be given the opportunity to reflect on what they are learning, collaborate with other learners, and check their progress. Scientists recommend to encourage learners to use their metacognitive skills to help in the learning process (Mayer, 1998; Sternberg, 1998; Yorke & Knight, 2004). Metacognition is a learner's ability to be aware of his or her cognitive capabilities and use these capabilities to learn. Self-check questions and exercises with feedback throughout a lesson are good strategies to allow learners to check how they are doing, so they can use their metacognitive skills to adjust their learning approach if necessary.

There is also a wide range of articles which describe Maritime English teachers' experience of using e-learning technology in their teaching practice. (Pritchard, B. (2004), Pardo, F., Muirhead, P. and Prasad, R. (2002). Bäckman, M. (2004)).

5. Model of effective e-learning.

The IMO recommends a large number of hours spent on Maritime English classes and self-study, a wide range of supporting material, including text books, workbooks, online lectures, and mobile content, need to be provided. This will enable teachers to conduct their English classes in a more dynamic and student-friendly way. E-learning can be a good education tool for future seafarers (students) and seafarers working onboard because life-long education and self-study is required in their ever-evolving working environment.

Implementation of e-learning as the instrument and the tool for L2 acquisition (in our research Maritime English acquisition) can be successful under different psycho-pedagogical conditions. Bellow, we offer own model of psycho-pedagogical conditions of effective e-learning. (fig.1):

The first part of the model we build on the basis of theoretical analyses, observations of the existing psychological, linguistic and pedagogical concepts. As you can see in figure 1, the psychological background of e-learning consists of scientific theories, psycho-pedagogical processes and psychological spheres of an individual. We described the ideas which sustain our understanding of psychological conditions of e-learning in the theoretical part of the article above.

Cognitive process includes the perception of a foreign language with all its elements, the ability of the individual to memorize exposed learning material, ability to attract and retain attention, development of thinking and imagination).

Metacognitive process includes teachers' reflections on the results of their teaching activity through students' abilities and skills assessment. It also includes students' reflections on the effectiveness and efficiency of the means of obtaining their knowledge and results.

L2 acquisition process should be directed on the development of main language activities: listening, speaking (monologs and dialogues), reading and writing. While teaching with the use of e-learning technologies for L2 acquisition, the teachers should always be aware of the deductive purpose of this use, strictly define what language activity is supposed to be developed, what skills and abilities will be improved, predict the results and feedback to what extend the purpose was realized.

The other part of the model is connected with the empirical research conducted among the students of the navigation department (30 students) and the lectures of Maritime English (10 teachers. We were researching the psycho-pedagogical barriers of the implementation of e-learning, teachers' and students' motivation of e-learning use. We are going to omit the procedure of the research but describe the results which were obtained.

6. Psychological barriers of e-learning technology implementation.

Some of the largest psychological barriers to the adoption of e-learning technology include:

6.1. Students.

1. The feeling of fear and anxiety. With so many education technologies relying on the internet for access to programs and systems, lack of internet access significantly hinders adoption.

2. The feeling of shyness and discomfort. It occurs in the case when a teacher asks to bring a device into the lecture room or gives a task based on some device and a student doesn't have it because of the financial component. Students without easy access to technology may fall behind, or they may feel shame or embarrassment by not being able to fulfill the task. Many low-income students don't have access to technology at home.

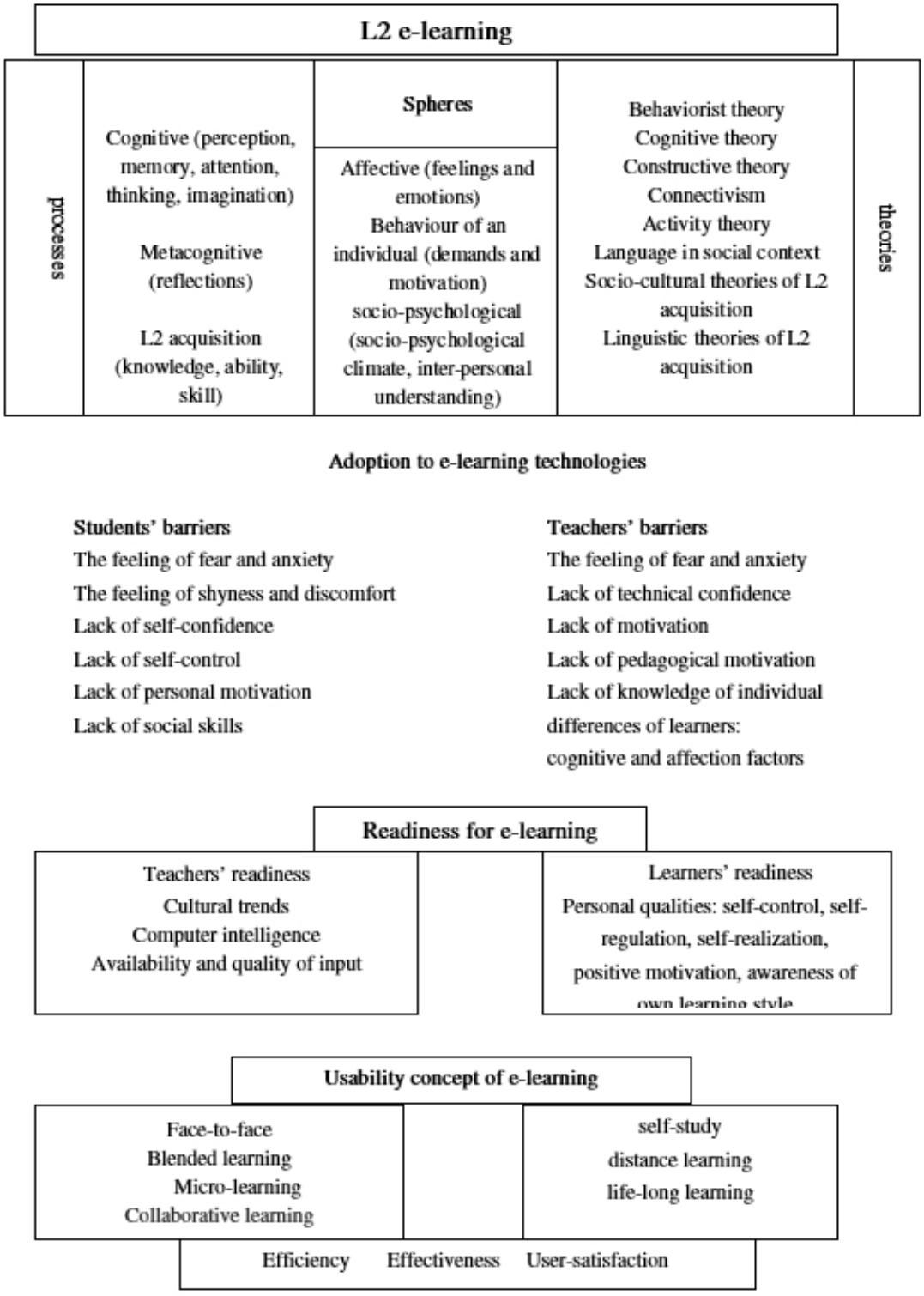
3. Lack of self-confidence. The stronger your learners' ability to be emotionally aware throughout the eLearning experience is, the better sense of control over their inner selves they gain, therefore the greater becomes their self-confidence to achieve their learning objectives.

4. Lack of self-control over one's emotions. Learners often feel frustration, boredom, and anxiety during difficult, dull, or disengaging eLearning assignments.

5. Lack of motivation. Self-motivation is the ability that we have to channel our motivation and drive to achievement. In eLearning, a strong sense of self-motivation on your learners' behalf means that they are able to generate positive feelings like enthusiasm, zeal, and persistence, in order to learn.

6. Lack of social skills. Social skills are the ability to relate to other people in a supportive way, by managing conflict. When learners are able to communicate and cooperate well with each other, they become more effective and produce better results.

Figure 1: Model of psycho-pedagogical conditions of effective e-learning.



Source: Authors.

6.2. Teachers.

1. Lack of confidence. Even if teachers have access to learning technologies, they're not receiving the proper training to use these technologies. Tech training is especially important for teachers because many of them aren't digitally intelligent and may not have skills like most of their students have.

2. Lack of knowledge of individual differences of learners. Social psychologists say that learners of L2 with the common methods of teaching achieve different results. These differences occur due to individual differences. They divide the learners into two groups, the cognitive and the effective. To the cognitive factors the scientists refer intelligence, language aptitude and language learning strategies. To the affective factors social psychologists refer language attitudes, motivation and language anxiety. (R. Mitchell& F. Myles,1998)

3. The feeling of fear and anxiety. Fears and anxiety concern the technical options: The Internet may be disconnected during the process of teaching, the site you are going to use is not opening, exercise may be downloading longer than you expected, the students don't respond to the task you prepared not in the way you expected and many other cases of frustration students' behavior.

4. Lack of pedagogical motivation to implement e-learning such as:

- Lack of productive activity. Even given all the benefits of e-learning, one cannot deny there are some drawbacks. A good example of a disadvantage of online learning is that practical skills are somewhat harder to pick up from online resources.

- Not always respond to learners' type. It's true that as individuals we don't all respond to one teaching method in the same way - some learn visually, and others learn with repetition or writing. E-learning responds to those different needs with the use of different types of material, whether that is audiovisual content or interactive testing on the go, there is a plethora of options to cater to the needs of each and every learner and in the end, help them learn online in a much more efficient way.

7. Teachers' motivation to use e-learning training in their work.

E-learning offers the ability to share material in all kinds of formats such as videos, slideshows, word documents and PDFs. Conducting webinars (live online classes) and communicating with professors via chat and message forums is also an option available to users.

In the fast-paced world of e-learning the available technologies to make a course new and exciting are always changing, and course content can and should be updated quickly to give students the very latest information.

Use of e-learning training require from the teacher special computer skills, methodological knowledge, extra time for preparation and doesn't give financial benefits therefore only motivated teachers implement e-learning in their teaching process. Their motives are: 1) facilitate own work as a teacher; 2) become competent in peculiarities of the professional subjects while teaching English for professional purposes; 3) awareness that input material will give adequate output of students' knowledge.

The learner is exposed to input. Parts of it are taken in short-term memory. These are intake. Some of the intake is stored in a long-term memory. It is considered to be knowledge of a foreign language. And the knowledge which is used by the learner to produce written and spoken foreign language is considered to be output.

While exposing e-learning material teachers concern about the output which learners acquire (efficiency of e-learning).

The question of proper input is important in e-learning. The context of target material should be appropriate lexically, grammatically and contextually. The teacher should expose the tasks which learners are able to fulfill. In other case the task will not give the desired result. That is why very often the learners are not enthusiastic about e-learning and prefer face-to-face teaching.

It seems obvious that the non-English speaking countries are faced with a greater challenge, namely that of establishing methodologies and developing materials that improve the efficiency of language teaching and the learning process. Together with traditional means such as textbook and blackboard, maritime English teachers must become aware of the benefits that new information and communications technologies provide language teaching, and, furthermore, they must take advantage of these means for themselves and for their students. But they must also take into account that those technologies have unique properties that must be applied to the teaching context using the appropriate methodologies.

The teacher has the role of facilitator and the maritime student constructs his own learning progress according to professional needs stipulated in STCW under the guidance of the teacher. Within the context of student-centred learning, self-study offers the learner autonomy over his learning progress. The student may select the time, the place and the intensity of learning. With e-learning the teaching process is moving from behaviouristic to constructivist didactic model. The process of supportive dialogue which directs the attention of the learner and prompts him through successive steps of a problem is known as scaffolding.

8. Recommendations to the L2 teachers starting the use of e-learning technologies.

1. A Learning Management System (sometimes also called "Course Management System", "Pedagogical Platform", "E-Learning Platform") is a software system that delivers courseware plus e-tutoring over the Internet. LMS should not be your starting point. LMS offers a large array of embedded tools that provide the ability to create, curate and enhance content. Also, the benefits of using a LMS include the all-in-one element which enables the user to create the platform (website) and the content all in the same space. But if you are only start-

ing with e-learning and creating online courses is not your professional responsibility, try free opportunities. LMS is not the only answer, you can implement e-learning with other tools, not expensive (even free) and easy to work with. You should start by thinking about an appropriate instructional design that uses appropriate teaching strategies for various learning types. Use videos on Youtube, encourage your students to use online dictionaries, share learning material on social sites, give consultations by e-mails.

2. If you feel like conducting a webinar, start with Skype – it is free and you will experience the teaching on line. Now, teachers can connect with students virtually using a lot of virtual tutoring tools. In this way you will know how you feel while talking (teaching) in front of a cam, how you manage organizational issues and will get feedback from your students.

3. If you have collected enough material – create an e-book using easy for use software, such as Flipping Book. Your e-book must satisfy different learning styles, there for include links to videos, pictures, authentic texts. Don't forget to update your e-book every year.

4. Mind cognitive process. Information should be chunked to prevent overload during processing in working memory (Miller, 1956). To facilitate efficient processing in working memory, online learning materials should present between five and nine items on a screen. If there are many items in a lesson, their organization should be shown in the form of information maps. Try free sites for making exercises, flashcards, tests, audio-material (e.g. www. quizlet) to make a small part of your lesson with e-learning technology)

5. Don't use e-learning chaotically. Make a schedule to establish an open line of communication with your students. Specify which means of communication you prefer and during which hours. The student will be aware that can receive the help or support that they need.

6. When you teach English for specific purposes (e.g. Maritime English, Technical English) and need to develop practical skills of speaking in professional environment, video will give you opportunity to build a real new dimension to your teaching methods. If your course content involves a level of practical skill, this can be demonstrated.

7. If you conduct lectures for distant learning, record your lessons. A video of the lecturer giving a lecture helps the students to feel interpersonal connection.

9. Conclusion.

1. In our opinion, the characteristic features of implementation of e-learning in a higher educational establishment is influenced by:

– a field of education in the higher establishment;

– policy of the higher establishment towards new technologies, its financial possibilities;

– a subject of learning and traditions of the department which provide its teaching;

– the country where higher establishment is situated.

2. We support the definition that e-learning is the use of new multimedia technologies and the Internet to improve the quality of learning by facilitating access to resources and services, as well as remote exchange and collaboration.

3. We claim that understanding theoretical basis of e-learning technologies, psychological barriers and didactic opportunities of teaching with the use of electronic devices and the Internet will help the L2 teachers improve their teaching competence.

4. In maritime industry the formation of international crews is a common practice. Therefore, researching the possibilities of e-learning for Maritime English teaching we would like to make some generalizations offering own model of psychopedagogical conditions of effective e-learning. The main contribution of our study is the finding of psychological barriers to effective adaptation to e-learning. We don't call them disadvantages but only barriers, which, as all barriers, can be eliminated or corrected therefore the psychological support is required for successful implementation of e-learning. This psychological support can be in the form of drills, exercises and psychological games.

5. We offer practical recommendations to teachers of a foreign language who are just beginning to introduce this technology into the educational process.

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