

Integration of computer technologies and interactive teaching methods in the professional language training of foreign students

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Abstract. The article examines the problem of professional foreign language training of foreign students in maritime fields. The analysis of socio-cultural, linguistic and psychological barriers caused by different levels of education and national characteristics was carried out. The need for integrating computer technologies and interactive teaching methods in the foreign language training was substantiated in terms of the integrative-contextual approach, the importance of recreating the subject, social and psychological contexts of the activities of marine specialists in teaching. The typical task in the foreign language environment was described, and the conclusion about the appropriateness of its use as a unit of study was made. The methodology and results of experimental training, which testify to the success of mastering a typical task in the foreign language environment and reducing communication barriers, were provided.

1 Introduction

In the last decade, Russia took important steps in the field of exporting education, and Admiral Ushakov Maritime State University is one of the participants in this global Russian project to train competitive foreign specialists, providing services on the international market. This project requires the adaptation of the curricula to a new contingent and students - to the educational and information professionally oriented environment. The best programs and methods, in which adjustments are made to facilitate the process of adaptation of foreign students to new educational, social, and cultural conditions were developed.

Foreign students face socio-cultural, linguistic, and psychological barriers due to the different levels of training, education, and national characteristics. Sociocultural barriers are difficulties associated with national norms and traditions. Linguistic ones are caused by grammatical, lexical, semantic, and phonetic difficulties that arise in the translation from one language to another. Psychological barriers are a feeling of anxiety and a fear of misjudging the communicative situation, which disrupts the perception and response to foreign language speech which causes incorrect interpretation of the interlocutor's behavior, self-doubt, and emotional instability. According to the survey conducted by us the authors (the sample was 39 people), 63% of the students' experienced difficulties in perceiving information in English; 67% emphasized poor knowledge of vocabulary on professional topics; 72% of respondents noted the fear of speaking with mistakes, uncertainty, and nervousness, 65% – confusion and tension. The small amount of RAM was indicated by the fact that 62% of

students could not accurately remember information and a sequence of actions.

Information computer technologies play a special role in training a specialist for professional foreign language communication. Many Russian and foreign authors claim that the use of computer technologies in learning a foreign language contributes to the acquisition of skills related to the analysis of information, critical thinking, motivates an independent study of the language, provides immediate and detailed feedback, analyzes errors, and develops student's creative abilities by providing alternative methods of language learning [1, 2, 3, 4]. The current, intermediate, and final types of control are carried out taking into account the psychophysiological abilities of the student [5, 6, 7, 8]. On the other hand, computer-assisted learning in teaching foreign languages has its limitations and is considered as an additional learning tool. There are problems with program management [9], imperfection of their development [10], limited opportunities for the teacher when working with a computer program in case of unplanned situations [11]. Most software tools used in foreign language training are aimed at developing reading, listening, and writing skills; recently interactive and virtual programs limited functions [12, 13]. Social and psychological studies indicate that an accurate and complete understanding is impossible due to the existence of many channels of information loss [14], which are dependent on the skills and experience of its perception and processing. Not all information can be expressed verbally, and the skills of perceiving non-verbal information depend on the social experience of a person, which differs even in the same age and social group.

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2 Problem Statement

The review shows that, despite the pronounced trend of professionalization of a foreign language in the framework of textual activity in oral and written form, computer learning does not solve the problem of forming an integral system of communicative algorithms, on the basis of which technological processes are regulated when performing typical professional tasks. Computer support is considered without interconnection with other methods of teaching professional foreign language.

Using a computer program, the student acquires static knowledge, while in technological processes it is necessary to quickly use it in time and space; therefore communication skills developed on the basis of computer support without taking into account the communicative algorithms that regulate the technology of professional activity are hypothetical; when trying to link them into the subject-technological, social and psychological contexts of communication, they act as psychological barriers in relation to each other. Therefore, the identification of pedagogical conditions for the integration of computer technologies and interactive teaching methods would improve the quality of professional foreign language training of foreign students.

3 Materials and Methods

It is possible for a foreign student to overcome the barriers associated with foreign language communication if the learning process is based on the integration of computer support and active teaching methods, primarily role-playing and business games, analysis of professional situations, which implies the professionalization of materials. In accordance with the requirements of the integrative-contextual approach [15], the unit of learning in the conditions of integration of the technologies used for vocational training is a typical professional task. This task is a generalized sign model of past situations of foreign language communication which has a complex internal structure, which includes subject-technological, socio-cultural, psychological, temporal, and proper foreign language components. For the student, the process of mastering algorithms for solving the task occurs as a complex problem situation, characterized by the need to highlight subject, social, temporal, and psychological conditions and foreign language means by which the technological processes are regulated.

The task contains indications of the goal, means, deadlines for its implementation, spatial accuracy of actions and an expected result. Modeling the subject, social and psychological contexts of the activity of a marine specialist within the typical tasks in the foreign language communication situation through adequate technologies will help to remove communication barriers [16].

Analyze the stages of mastering the typical professional task for the watch officer "Checking in – taking a watch on a ship." At the first stage, attention is

paid to the removal of linguistic barriers - with the help of training programs based on the STEP software product (developer: Avanesova [17]); microtasks are given to the students. In these tasks, lexical and grammatical models of Maritime English are presented. The use of phonograms with different accents, realities of professional communication are aimed at removing psychological barriers.

The task is solved with the help of computer support in presenting the microtask in text and graphic forms. The task can be formulated in different modes: translation of phrases, words, and sentences; construction of phrases and sentences; filling in the gaps; typing the correct answer from the keyboard; selecting a picture, etc. If the student has difficulty in completing the task, it is possible to use a hint. The next step is to enter the result of the task into the computer. After analyzing the result of the task execution displayed on the screen, the program provides for the issuance of statistics on the correctness of the microtask execution in the form of an audible or visual text signal ("correct"). If the student is satisfied with the given statistical information, he proceeds to the control performance of the task or performs it again, correcting the errors. At the final stage, the analysis of the result of the control execution is presented.

Performing computerized exercises in the training mode with a hint with graphic and sound accompaniment, the cadet can reproduce the components of the material. The students aim at the accuracy of disclosing the contextual meaning of words or blocks of information in a foreign language and the efficiency of their correlation with the subject characteristics of the object in the picture. In training, the ratio of the number of correct and incorrect answers is considered in accordance with the task.

At the second stage of training, mastering the training programs is followed by a series of role-playing games to create a mechanism of speech activity, contribute to the accuracy and efficiency of understanding of situational foreign language information in mastering the technological components of the algorithms of the professional activities. Role-playing games based on standard marine colloquial phrases are aimed at developing the main strategies for speech and socio-professional behavior in foreign language communication situations to form a socio-professional component of the professional foreign language activity and reduce socio-cultural, psychological, and linguistic barriers. Students should understand information through the use of message markers, repetition of information and rephrasing of its key points, duplication of information by the interlocutor, etc. Tasks for role-playing games united by one storyline reflect the communicative component of the technology of professional activity of a marine specialist within the standard task.

At the final stage, a business game is played on a simulator. Algorithms of professional behavior of a marine specialist in foreign language communication situations developed during role-playing games form the basis of students' foreign language speech activity:

commands from the bridge via internal communication using IMO phrases, reports on the actions performed, recording information about the work performed, etc. The original materials of checklists containing the main algorithms of watchkeeping activities in English, reports on pre-accident and emergency situations on the ship (Incidents reports) are used to strengthen these algorithms.

To determine the level of assimilation of models of professional foreign language communication, we used the method of component analysis. The following components were identified: speech activity (SA) - characterizes the student's readiness for speech activity in a foreign language and is determined by his participation in communication; UA - accuracy of understanding of information of the interlocutor in a foreign language determined by the adequacy of the

answer or the subject or instrumental action of the student on the basis of foreign language information; SAE - efficiency of speech actions characterized by a standard time limit for solving the task, for example, no more than 10 minutes are given to turn in a watch.

Formula 1 was used to determine the criterion for mastering the components:

$$I_{ca} = \frac{P_c \cdot 100\%}{NO}, \quad (1)$$

P_c – the sum of conditional points for this component; NO - number of operations that make up this component. The results of students' activities were recorded in the card of the component analysis of role-playing and business games (Table 1).

Table 1. The map of the component analysis of game.

Content Operations	КомпонентыComponents		
	SA	UA	SAE
1. Meeting the shift watch officer			
2. Transfer and acceptance of the watch based on the checklist and written instructions of the captain			
3. Checking navigation equipment			
4. Exchange of information on navigational warnings and weather conditions			
5. Exchange of information on current ship operations			
The amount of conditional points for the component assimilation			
Component assimilation rate, %			

4 Results and Discussion

The results of computer support for the development of the linguistic component of the typical professional task

“Checking in and out of the shift,” which indicate a high level of assimilation of lexical material and communication models, are shown in Figure 1.

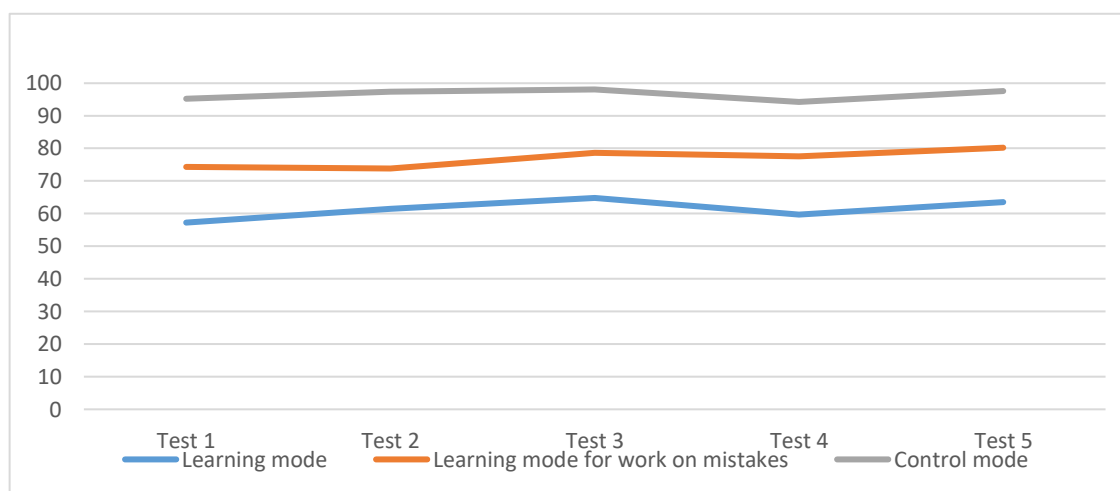


Fig. 1 Change in the arithmetic mean indicators of the assimilation of the linguistic component by students based on the results of computer testing, %.

However, the results of the component analysis of the first role-playing game presented in Table 2 indicate the presence of a number of communicative barriers that did not allow students to successfully apply their knowledge in the communicative environment.

Communication skills developed outside the social and psychological contexts were not included in the general system of activity. The component analysis of the communicative activity of students in role-playing

games allows us to conclude that in the absence of real communication experience, computer technologies do not remove those barriers that prevent the operational linking of the subject-technological and communicative aspects of the activities of a marine specialist into a single whole; computer programs alone are not able to create a proper level of the professional communicative competence.

Table 2. Summary table of average indicators of assimilation of the components of communicative activity.

Learning technology	Indicator of assimilation of the components, %			Total mean indicator of assimilation of the components, %
	SA	UA	SAE	
Role-playing game 1	43.70	54.32	77.27	58.43
Role-playing game 2	75.22	77.63	81.81	78.13
Role-playing game	93.16	95.32	86.36	91.61
Business game on the simulator	79.53	70.87	68.00	72.80

The accumulation of communication experience in the next two role-playing games increased the average indicator of assimilation of the components of students' activities, and the overall average indicator of assimilation of the components was 91.6%. The results of the average indicators of speech activity, the accuracy of understanding of the information in a foreign language and the promptness of making and implementing decisions in a business game on the simulator were lower, since the psychological content of the work of a watch officer and the intensity of his work regime were set by the physical similarity of a bridge and its navigation equipment, the changing environment and the situational similarity of activity and communication. The strict time limit for performing operations and the unpredictability of changes in the situation were the factors that cause mental and emotional-volitional stress of the watch officer. Nevertheless, the results obtained allow us to conclude that the parameters of students' activity and communication are closer to the requirements of professional standards.

In general, the results of teaching foreign cadets with the help of the technology of professional training contributed to the reduction of stressful mental states. On the basis of the accumulated experience of foreign language communication with representatives of different nationalities, the period of adaptation of cadets to the peculiarities of their speech was reduced, and the accuracy of disclosing the contextual meaning of terms increased. The accuracy of correlating foreign language information with the subject characteristics of processes and control objects presented both on the computer screen and in role-playing and business games has also improved.

The survey conducted after performing the typical professional task with the use of computer technologies, role-playing and business games showed that 95.3% of foreign cadets decreased their self-doubt, 98.5% lost fear to incorrectly assess the communicative situation, and 99.3% were convinced that have expanded their

vocabulary on professional topics and learned to cope with grammatical, lexical, semantic, and phonetic difficulties.

5 Conclusion

Having great potential, computer technologies play an important role in training a specialist for foreign language communication at the initial stage of performing a typical professional task; however, the absence of social and psychological contexts of professional activity in a computer program, characterized by the need for prompt joint decision-making, does not allow for developing a communicative competence in accordance with the requirements of this activity; therefore, the integration of computer support and active learning methods is necessary. United by the typical professional task, computer technology, role-playing and business games on the simulator help develop the student's ability to independently design professional-technological and foreign language speech activities, communicate in solving tasks.

Due to this learning model, mental stability in relation to constantly arising difficulties has been developed, and confidence in professional foreign language communication appeared. In performing a typical professional task, when resolving several problem situations by means of a foreign language, the algorithms of activity are mastered at the level of professional meanings.

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