ADULT EDUCATION IN FOREIGN LANGUAGES:
INTERACTIVE SETTINGS, MODELS, PRACTICE

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Currently, interactive virtual settings has dominated the context of adult education in foreign languages in Ukraine. Foreign languages adult education trends in the 21st century underwent numerous changes and innovations.

Formulation of the problem. One of the main goals of any university is to make adult education in foreign languages more advanced and to create e-learning environments for students via Web-based technologies and powerful internet connections. And the usage of Web-based technologies and powerful internet connections provides new opportunities for the development of adult education trends especially for those who are learning foreign languages. The implementation of technological resources is directly related to the ways the teachers perceive their functionality. Thus, it is important for teachers to have positive attitudes towards a certain technology to adopt it efficiently in their working activities for adults.

The widespread availability of mobile devices has led to a creation of new domain which is called a Mobile Assisted Language Learning (MALL). Nowadays MALL is used in the field of adult foreign languages learning.

B. Alexander (Alexander, 2004) in «Going Nomadic: Mobile Learning in Higher Education» mentioned, that more broadly, mobile and wireless computing has altered the rhythms of social time and has changed uses of social space.

A vast variety of mobile devices (e.g. pads, smart phones,

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cell phones, personal digital assistants etc.) is an essential part of MALL and teachers are challenged to use any kind of these mobile devices in English learning technology.

Analysis of current research. The problem of Mobile Technologies and Devices implementation into adult education has been investigated by B. Alexander, M. Chen, H. Hsu, M. Sharples, J. Yannick, I. Beskrovny, V. Bykov, V. Vaschenko, O. Dyadichev, T. Koval, V. Kuklev, V. Kukharenko, O. Pybalko, N. Syrotenko, A. Popova, S. Titova.

Aspects remained to be investigated are connected with the enlightening of interactive settings as an advanced digital educational environment for adults to empower learners (i.e. adults) to engage and assume active roles to face and resolve global challenges to become proactive contributors to an effective foreign languages learning.

The purpose of the article is to enlighten new trends, language teaching approaches, technologies, models, methods and procedures of adult education in foreign languages as well as practical results to reveal new opportunities created by technologies and perspectives on the role that interactive reality has come to play in the development of contemporary society.

Research methodology and methods. The methodological and theoretical basis of the research is the scientific works on the use of interactive strategies, tools and devices on oral and written skills that may be initially effective for adults in the context of foreign languages education. The validity of the obtained results is confirmed using various generally accepted and specific methods: theoretical generalization, abstraction, dialectical analysis, expert assessments, comparison and systematization, system approach.

Presentation of the main material. MALL is undergoing rapid evolution. Product Marketing Companies suggest a full-service product development in providing particular services (for instance, a diverse product of mobile devices) aimed at particular purposes for adults – to use some portable mobile devices to carry out activities that support the learning, reinforcement, and practice of any aspect of the target foreign language (Camacho, 2011).

Some schools in the USA, the Netherlands and the South Korea adopted MALL technologies where one can easily use a variety of personal portable devices (cell-phones, laptops, and net-books) during English classes to implement learning and research activities through English in class.

The introduction of MALL requires from teachers to develop special skills to be rather competent to use these software applications while adding new tools as teaching aids in adult foreign languages studies (Luque-Agullo, 2015).

The main features of MALL are accessibility, immediacy and interactivity (Bachore, 2015). MALL creates an interactive learning environment, using different kinds of applications, which are available on mobile devices. Nowadays in MALL environments, the immediacy, interactivity and accessibility are considered to be general outlines and characteristic features of adult education in foreign languages. Different kinds of applications, available on mobile devices, allow educators to create interactive learning environments for adults which can be integrated successfully into the learning process of foreign languages.

English teachers with the help of Wi-Fi, 4G Internet access as well as with any kind of mobile technology or device create new opportunities for adults to be engaged into real virtual interactions, which are beyond their traditional studies.

MALL differs from Computer Assisted Language Learning (CALL).

The distinguishing feature of MALL is connectivity (Gafni, 2017). In spite of the

traditional methodology, MALL technologies have created the ways to help adults to participate in self-organized educational summits that bring them together to share experiences, videos, talks, events, even discussions in larger or smaller groups either. So a new educational trend of adult foreign languages learning – «Learning through Gamification» technology, has actually emerged.

S. Deterding (Deterding, 2011) is one of the first who gave the definition of «Learning through Gamification» technology in scientific literature.

«Learning through Gamification» technology is defined as the use of game design elements in non-game Contexts (Deterding, 2011). «Learning through Gamification» technology is an educational approach that impacts on adults motivation to learn foreign languages by using game-based performances. Adults, who use computer games to learn foreign languages, are more alert, active, feel themselves more involved and experienced in activities and appear to become more challenging than those ones who participate the traditional practicums.

Adults, who are engaged in «Learning through Gamification» technology, feel themselves more comfortable in using computers, they utilize computers as part of their learning programs and for them there is no stress to be involved in the process of Second Language Acquisition.

CALL is briefly defined as the search for and study of applications of the computer in language teaching and adult learning (Levy, 1997). CALL is a process where a learner uses a computer and improves language procedures (Jarvis, 2013).

Firstly the term «CALL» has been used to describe the current basic mechanical software programs only and limited spaces to desktop computers (Jarvis, 2013; Levy, 1997). But in several years, the situation has changed greatly because of new mobile devices which were incredibly fluid and helped teachers to integrate this virtual reality into the adult learning environments.

For last decades the field of mobile devices has grown tremendously and as usual include applications, online blogs and v-logs (video-blogs), virtual learning environments, online courses, and more things connected with interactive reality (Bykov, 2009; Vaschenko, 2011; Kukharenko, Rybalko, Syrotenko, 2002).

Computer-Integrated Learning (i.e. Computer Didactics) is based on the use of advanced computer technologies and the advanced computer technologies provide a lot of opportunities for optimization of adult education in foreign languages as well.

Computer Didactics is a complex field of research and in the nearest future, it should be in a certain degree an identity of classical disciplines, such as physics and mathematics, which «... as in the result of active differentiation will become purely specialized disciplines, closing up the sphere of artificial intelligence, striving to deal with the program ...» (Siekman, 1985, p. 14).

An evidence of this argument is the fact that many researchers, working in the field of artificial intelligence are interested mainly in the psychology of biological objects. From their point of view, artificial intelligence is «....the way of study, for example, of the way people communicate or the ability to study» (Simons, 1986, p. 70).

At the same time, a narrow specialization within the frameworks of creating and constructing educational systems of artificial intelligence contributes to the dissemination of a specific kind of «cybernetic reductions» (Simons, 1986) as a methodological and heuristic principle.

From the philosophical point of view, the presence of reductionism leads to a narrowing and unification of the research hori-

zons. However, in computer didactics, there is no such danger either. Computer didactics approach to the problem of learning is based on the fact that the unit of behavior is a plan-system that generates a style of behavior that is similar to the feedback loops which are used in computing machines (Simons, 1986).

In the context of information theory of learning (Simon, 1986), a man is considered to be as an essential part of active information process, and who, at the same time, possesses the ability to target, clearly planned multivariate tasks and actions. With the help of mathematical modeling one can identify a number of general procedures of the learning process, and then represent them in cybernetic terms. But the main feature of cybernetic learning is that only such forms of learning that are inherent and accessible to computer systems of artificial intelligence can be carried out here.

Thus, the main procedure of cybernetic simulation of the process of adult foreign languages education is the development and compilation of computer training programs. «The program can perform an analysis from the point of "objectives" and "the ways of learning" and present a plan for preparation in the form of a sequence of necessary operations. An appropriate procedure is made and it is specified which of these procedures fulfillment is a previous condition for the fulfillment of others» (Simons, 1986, p. 83).

The algorithmic nature of the program can be expanded by weakening its mathematical rigidity and strengthening the database. It provides an opportunity for more flexible program in the field of learning adults foreign languages.

The optimal task of cybernetic and program learning of adults is to analyze the assignment in the context of goals and the ways of its implementation in the form of a sequence of necessary operations and the elaboration of a certain procedure of educational actions with indication of the possible preconditions for their implementation (Simons, 1986).

The characteristic feature of the curriculum program is the ability to improve its «behavior» within the inductive operations. «The basic idea of the plan comes from the imagination about the world around us, and the plan, having sufficient flexibility in its store, is adaptable to the new conditions» (Simons, 1986, p. 83).

Thus, the formulation and solution of the problems of learning in computer didactics are mainly come out from the comparison of the merits of natural thinking of the subject (in particular, if it is a student) and the possibilities of artificial intelligence that reproduce them (Endryu, 1985). This comparison as usual reveals a range of problems of different order related to the simulation with the help of computers. The multiplicity of program learning, that involves almost all areas of intellectual activity of students (up to the intuitive and subconscious phenomena), caused the necessity of identification and structuring of biological, physiological, psychological and other methods of obtaining, representation and purposeful processing of information under the new rules (Intellegente System, 1985). What are these rules?

Metaheuristic rules are complex cognitive phenomena, represented in the scientific literature as a set of techniques, researches and actually they lead to the most optimal solution of the problem (Intellegente System, 1985). Sometimes we expand the educational materials or information in the class, and of course such a differentiation causes the question: what should be a correlative coefficient of information loaded into self-learning system (e.g. computer – as a system, a person – as a system) to supply its better functioning? We will receive an

answer if we can clearly structure not only the information material, but also the process of searching it in itself.

These outlines will make us to understand better the methods and tools that are used within our research activities: developing research questions and objectives; deciding on a study of research design; quantitative and qualitative data and their implementation; methods for collecting data; basic concepts of probability; descriptive analyses for quantitative data; Interpret sources of data and evidence-based conclusions and recommendations.

There are some Languages across the Curriculum Models(LACM):

- Adjunct Model (English classes are taught by teachers);
- Parallel Model (courses conducting the integration of the elements of each other);
- Fusion Model (students participate language level A1/A2);
- Combined Model (classes and discussions are taught in foreign language) (Gafni, 2017).

The following studies represent student behavioral intention to use MALL in the classroom, i.e. evaluating the Mobile Devices Acceptance Model (Gafni, 2017).

Our research activities are based on a survey where 30 IT students have got an assignment to prioritize their intention to use each of suggested Mobile Devices in the English Classroom to the next priorities:

1 – the first priority, 2 – the second priority, 3 – the third priority, 4 – the fourth priority, 5 – the fifth priority, 6 – the sixth priority.

The students have also been given information about the functions of Mobile Devices: audio devices; digital cameras; computer applications; office tools and equipments; mobile Internet on laptop, Mac, PC; Social Networking Web-Sites. The results of the survey are represented in Table 1.

Table 1

Functionalities of mobile devices for developing the language skills

Mobile Devices	Priorities: from 1 to 6
1. Audio	2, 5, 1, 1, 4, 2, 1, 3, 3, 3, 4, 3, 1, 1, 1, 3, 2, 5, 1, 6, 4, 3, 1, 1, 6, 2, 2, 5, 2, 3
2. Digital cameras	4, 6, 2, 3, 5, 6, 2, 4, 5, 5, 6, 4, 6, 4, 6, 6, 5, 5, 6, 6, 4, 3, 3, 2, 6, 4, 4, 2, 6, 5
3. Computer Applications	3, 3, 6, 2, 1, 5, 5, 6, 6, 1, 3, 2, 2, 6, 2, 6, 6, 5, 3, 2, 5, 4, 4, 2, 2, 2, 1, 2, 2, 1
4. Office tools and equipments	6, 4, 3, 6, 2, 3, 4, 2, 2, 2, 1, 5, 3, 2, 3, 5, 4, 4, 2, 2, 2, 2, 3, 3, 1, 3, 2, 2, 5, 6
5. Mobile Internet on laptop, Mac, PC	5, 2, 4, 5, 3, 1, 6, 1, 4, 6, 2, 6, 4, 3, 4, 1, 2, 1, 1, 1, 4, 4, 3, 5, 3, 4, 4, 4, 3, 1
6. Social Networking Web-Sites	1, 1, 5, 4, 6, 4, 3, 5, 1, 4, 5, 1, 5, 5, 1, 1, 1, 1, 2, 3, 3, 2, 1, 2, 4, 5, 6, 1, 1, 2

The experiment belongs to the group of expert assessments (Orlov, 2002).

First of all we formalize the results of the experiment and assess its main characteristics (functions). Then we denote *i-m* evaluation as if it is an expert (or a student) of the *j-system* through e_{ij}. Magnitudes e_{ij} take priority values, and in the case the magnitudes e_{ij} take integer values from the set $M = \{1, 2, 3, 4, 5, 6\}$.

The results of expert survey can be represented by a matrix:

$$E = \begin{pmatrix} e_{11} & e_{12} & \dots & e_{1m} \\ e_{21} & e_{22} & \dots & e_{2m} \\ \dots & & & \\ e_{n1} & e_{n2} & \dots & e_{nm} \end{pmatrix} \quad (1)$$

where $n = 30$, $m = 6$.

The matrix, containing expert answers, is represented below the paragraph in Table 2.

Table 2

Values of e_{ij}

i \ j	M 1	M 2	M 3	M 4	M 5	M 6
1	2	4	6	5	1	3
2	5	6	4	2	1	3
3	1	2	3	4	5	6
4	1	3	6	5	4	2
5	4	5	2	3	6	1
6	2	6	3	1	4	5
7	1	2	4	6	3	5
8	3	4	2	1	5	6
9	3	5	2	4	1	6
10	3	5	2	6	4	1
11	4	6	1	2	5	3
12	3	4	5	6	1	2
13	1	6	3	4	5	2
14	1	4	2	3	5	6
15	1	6	3	4	1	2
16	3	6	5	1	1	6
17	2	5	4	2	1	6
18	5	5	4	1	1	5
19	1	6	2	1	2	3
20	6	6	2	1	3	2
21	4	4	2	4	3	5
22	3	3	2	4	2	4
23	1	3	3	3	1	4
24	1	2	3	5	2	2
25	6	6	1	3	4	2
26	2	4	3	4	5	2
27	2	4	2	4	6	1
28	5	2	2	4	1	2
29	2	6	5	3	1	2
30	3	5	6	1	2	1
Total	81	135	94	97	86	100
Average	2,7	4,5	3,13	3,23	2,87	3,33
Standard Deviation	1,58	1,41	1,46	1,63	1,80	1,81

For each j-column we can count sum of points:

$$e_j^{\text{сум}} = \sum_{i=1}^{n} e_{ij} \text{, an average point value } e_j^{\text{сред}} \frac{1}{n} \cdot e_j^{\text{сум}} \quad (2)$$

and standard deviation $\sigma_j = \sqrt{\frac{1}{n-1} \cdot \sum_{i=1}^{n}\left(e_{ij} - e_j^{\text{сред}}\right)^2}$, (3)

where $n = 30$.

It is significant, that minimal value of the sum of points is 30 (all "1 numbers"), the maximum value is 180 (all "6 numbers").

The ranking of Mobile Devices according to these sums or to average values gives an evidence of their preference in the English Classroom.

The smaller is the sum or an average value, the greater is the preference. The standard deviation σ_j characterizes the dispersion of j-Device values, and the less

dispersion is, and the more coherent is the evaluation.

From data processed, we make a conclusion that M 1-Device is more preferable and M 1-Device – M 3-Device are characterized with smaller values dispersion.

A more detailed characteristic of the preference is possible, i.e. with the help of sample distribution function for place-preference allocation.

Here we denote through p_k^j the frequency of occurrence of the preference number k for j-Device in j-M column.

$$p_k^j = \frac{1}{30} \cdot q_k^j, \quad (4)$$

where q_k^j is the quantity of occurrence of the preference number k for j-Device in j-M column. It is presented in Table 3.

Table 3

Values of q_k^j, calculated according to Table 2

k \ j	1	2	3	4	5	6
1	9	6	7	3	3	2
2	0	4	3	7	6	10
3	2	11	7	4	3	3
4	7	3	5	9	3	3
5	11	4	3	4	6	2
6	4	10	4	2	4	6

We can determine other characteristics of expert data, such as median. The data has been revealed in Table 4.

Table 4

Values of p_k^j, calculated according to Table 3

k \ j	1	2	3	4	5	6
1	0,3	0,2	0,233333333	0,1	0,1	0,066666667
2	0	0,133333333	0,1	0,233333333	0,2	0,333333333
3	0,066666667	0,366666667	0,233333333	0,133333333	0,1	0,1
4	0,233333333	0,1	0,166666667	0,3	0,1	0,1
5	0,366666667	0,133333333	0,1	0,133333333	0,2	0,066666667
6	0,133333333	0,333333333	0,133333333	0,066666667	0,133333333	0,2

Conclusions and prospects for further research. Thus the research activities helped us to find out that the interactive settings for adult education in foreign languages nowadays is one of the desirable forms of getting knowledge.

As a rule the interactive settings is represented by Mobile Assisted Language Learning technologies, Computer Assisted Language learning technologies, new and emerging some Languages across the Curriculum Models and holds a great promise for the future by overcoming traditional barriers in adult education in foreign languages today. The data, we have got experimentally, revealed an evidence that Mobile Assisted Language Learning technologies and Computer Assisted Language learning can contribute to changes of teacher-student roles in adult education in foreign languages in the context closely related to work done.

The perspectives of further investigations are connected with the development of information culture in the field of adult education in foreign languages (e.g. the culture of getting and processing information) as it appears from one point as an aim of adult educational activities, and from the other point of view as a way of their realization.

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Sura N. A. Adult Education in Foreign Languages: Interactive Settings, Models, Practice

The article dwells upon modern English as a Second Language (ESL) educational settings which are based on innovative technologies modernizing the gist of adult education in a foreign language and containing organizational models of the learning process, founded on the dialectical commonality of ESL methodologies. Program models for ESL education that can be realized at university departments under certain conditions are presented. It has been identified that ESL learning via mobile devices and apps, modern tech and computer-based technologies facilitates the individualistic approach of teaching, encourages mental activity and improves the effectiveness of the learning process.

Some elaborations have been made to the statements regarding adult ESL education in the context of computer didactics as an innovative learning system in which the theoretical approaches and practical achievements of such an interdisciplinary branch of knowledge as Artificial Intelligence are realized. The article emphasizes the deep connection between the development of ideas through Artificial Intelligence and the disciplines which presuppose understanding, decision-making, learning i.e. Psychology, Logic, Linguistics.

The comparative analysis has been done in order to identify empirical data of questionnaires regarding prioritizing the use of mobile devices, apps, and digital media in the ESL learning process.

The analysis serves as a detailed breakdown and evidence of the on-hand teaching experience at universities.

Keywords: adult education, interactive settings, models, program, technologies.

Сура Н. А. Іншомовна освіта дорослих: інтерактивне середовище, моделі, практика

У статті схарактеризовано сучасне іншомовне освітнє середовище, яке базується на інноваційних технологіях, що модернізують зміст іншомовної освіти дорослих й в основу яких покладено цілісні моделі організації навчального процесу, засновані на діалектичній єдності методології навчання іноземних мов. Представлено програмні моделі з іншомовної освіти дорослих, які за певних умов можна реалізовувати на базі університетських підрозділів. Визначено, що навчання іноземних мов за допомогою мобільних пристроїв та додатків, сучасних інформаційних та комп'ютерно-інтегрованих технологій сприяє особистісній орієнтації педагогічного процесу, підвищенню пізнавальної активності людини та покращує ефективність управління навчальною діяльністю.

Подальшого розвитку набули положення щодо іншомовної освіти дорослих у контексті комп'ютерної дидактики як інноваційної навчальної системи, в якій реалізуються теоретичні підходи і практичні досягнення такої міждисциплінарної галузі знання, як штучний інтелект. Підкреслено, що розвиток ідей штучного інтелекту спирається на його тісні взаємозв'язки з науками, які вивчають явища пізнання, розуміння, прийняття рішень людиною, тобто з психологією, логікою, лінгвістикою.

Здійснено порівняльний аналіз й наведено емпіричні дані опитування стосовно пріоритетності використання мобільних пристроїв, додатків та цифрових приладів у процесі навчання іноземних мов, що є детальним аналізом й реальним свідченням університетської викладацької практики.

Ключові слова: освіта дорослих, інтерактивне середовище, моделі, програма, технології.

Сура Н. А. Иноязычное образование взрослых: интерактивная среда, модели, практика

В статье подана характеристика иноязычной образовательной среды на базе инновационных технологий, которые модернизируют содержание иноязычного образования взрослых и в основу которых положены целостные модели организации учебного процесса, основанные на диалектическом единстве методологии обучения иностранным языкам. Представлены программные модели иноязычного образования взрослых, которые при определенных обстоятельствах могут быть реализованы на базе университетских подразделений. Установлено, что обучение иностранным языкам с помощью мобильных устройств и приложений, современных информационных и компьютерных технологий способствует личностной ориентации педагогического процесса, повышению познавательной активности и улучшает эффективность управления учебной деятельностью.

Дальнейшее развития получили теоретические положения иноязычного образования взрослых в контексте компьютерной дидактики как инновационной учебной системы, в которой реализуются теория и практика такой междисциплинарной отрасли знаний как искусственный интеллект. Подчеркнуто, что развитие идей искусственного интеллекта происходит в тесной взаимосвязи с науками, которые изучают процесс познания, понимания, принятия решений, т.е. с психологией, логикой, лингвистикой.

Проведен сравнительный анализ эмпирических данных приоритетности использования мобильных, цифровых устройств и приложений в процессе обучения иностранным языкам, что является детальным анализом и реальным подтверждением университетской преподавательской практики.

Ключевые слова: образование взрослых, интерактивная середа, модели, программа, технологии.

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