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INNOVATIVE TECHNOLOGY DESIGN FOUNDATIONS OF FOREIGN LANGUAGE LEARNING FOR COLLEGES

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Abstract

The article discloses a set of factors, which has conditioned the necessity of embedding new educational technologies in vocational education. The initiated research, which major outcome is the innovative three-component technology of foreign language learning for vocational education and training (VET), was based on pedagogical design fulfilled into a new structure of learning technology. Three steps of modernisation of the technology have been suggested in order to comply with the contemporary requirements for the preparation of work force, namely: revision of the content of foreign language learning at VET; introduction of an electronic learning medium that shall be used along with traditional ones, and careful consideration of evolved social and personal characteristics of college students when organising the learning process. Fundamental theories of general systems and activity as well as the student-centred approach have become the research scientific foundations. They indicated the path to modernisation by working out the technology structure, introduction of its new elements along with reshaping the traditional teacher's and student's roles with an emphasis on both in-class independent work and self-study of the latter. The speciality of the research is the study of evolved social and personal characteristics of college students, which in combination with the theoretical fundamentals laid down the guidelines for modernisation, individualisation and interiorisation of the foreign language learning process for the achievement of more significant, vocational and practice-oriented learning outcomes. The designed technology possesses an ability to communicate with other levels of vocational education that has been proved within the research.

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1. Introduction

Post-industrial stage of social development requires certain transformations of the structure of the vocational education and training (VET), which should meet the needs of the knowledge-based economy and open society. Therefore the Government of the Russian Federation has initiated the Federal targeted programme of the education development for the period of 2016-2020. Its first task is 'to create and disseminate structural and technological innovations in vocational education and training' (Decree of the Government of the Russian Federation No. 497, 2015). Among its essential target indicators and indices there is 'working out and dissemination of new educational technologies at vocational and tertiary education, modernisation of the content and technologies of vocational education and training in conformity with the modern economy and changing demands of the people' (Decree of the Government of the Russian Federation No. 497, 2015, The forecast of long term socio-economic development of the Russian Federation for the period until 2030, 2013).

2. Problem Statement

Such statement of the problem allows detecting a set of factors that condition and actualise the need for well-qualified college graduates:

- the development of small and medium-sized businesses;

- the steadily growing tendency to tighten job requirements that college graduates have to meet;

- the realisation that they are college graduates who will become the major driving force of the knowledge-based economy (Dalton et al., 2013; Jackson, 2013).

In summary, a modern college graduate should possess the known beforehand set of skills, social and personal qualities so as to be able to fit the production process as well as adapt to its constantly changing conditions. This set of skills and qualities has been recorded in the third edition of Federal State educational standards (National Curriculum) of VET in 2011-2014.

3. Research Questions

In order to implement the state priorities in vocational education there is a need to diversify VET educational programmes where traditional methodology should be replaced with innovative educational technologies.

The review of special sources reveals that the term 'technology' may be widely interpreted. Among its various definitions there are:

✓ Technology is a didactic concept, part of Pedagogy (M.A. Choshanov, B.T. Likhachev, P.I. Pidkasisty et al);

✓ Technology is a pedagogical process (V.S. Bezrukova, M.M. Levina, V.D. Simonenko, V.V. Yudin);

✓ Technology is a pedagogical system (V.P. Bespal'ko, V.V. Guzeev et al.);

✓ Technology is a procedure or an algorithm that describes the teacher's and students' activities (V.M. Monakhov, V.V. Serikov, V.A. Slastyonin et al.);

✓ Technology is an innovative method of learning. This is the most extensive definition that covers diverse pedagogical tools at the time being;

✓ Technology is a mode of organisation and management of the learning process, such as the division of a Programme of study into blocks and modules or the time spent on learning into credits similar to European Credit Transfer and Accumulation System (ECTS);

✓ Technology is a means of modern communication in education.

✓ Examining pedagogical technology, which is a pedagogical system, V.P. Bespal'ko (Bespal'ko, 1989) regarded it as an ensemble of means and methods of reproduction of the theoretically founded learning and upbringing processes, which allowed successfully achieving the set educational targets. Considering VET, D.V. Chernilevsky (Chernilevsky, 1998) specifies that a learning technology is a complex integrated system that includes an organised multitude of operations and actions that provide pedagogical target setting, learning content and process, which are directed at acquisition of knowledge, gaining vocational skills and moulding of students' personal qualities. We adhere to the definition in our research. While designing and trying the learning technology, we also draw on T.Yu. Lomakina's research, in which she detected and justified four major types of innovative technologies most often used by educational establishments (Lomakina, 2008, 2011):

✓ Modular technologies that provide accurate and reliable learning outcomes, which fit an element of a manufacturing process;

✓ Simulation technologies where a unit of learning process imitates a fragment of a trade. Some insignificant for the period of training conditions or factors are ignored or simplified;

✓ Project technologies that let students while working in a group acquire a future career as a whole;

✓ Developing technologies and approaches (the student-centred approach, problem-based learning, information technologies) are oriented to the acquisition of general competencies and ensure the occupational mobility of graduates.

4. Purpose of the Study

In order to design an innovative learning technology that conforms to the requirements college graduates face, there is a necessity to modernise all its constituent parts comprehensively and simultaneously. First of all, there is a need to revise the content. Its modernised version should reflect cutting edge fundamental knowledge in trade in a sufficient if moderate amount. Importantly, the new content should be highly practice-oriented and prognostic (Neild et al., 2015). Second, components of a learning technology should consider transformed requirements for the form of learning materials as well as acquire such essential qualities as being multimedial, dynamic, i.e. having an ability to be regularly adjusted, renewable with the view to increasing students' motivation to self-study. Third, a designed learning technology should include personal characteristics, social and psychological peculiarities of the new generation of students, the so-called millennials.

5. Research Methods

The methodological tool that shall allow renewing the content and interconnecting the mentioned here above constituent parts of the innovative learning technology is the pedagogical design.

The analysis of issues of the pedagogical design (N.G. Alekseev, E.Yu. Korostylyeva, V.V. Kraevsky, M.M. Levina, O.G. Prikot, M.I. Rozhkov, V.A. Slastyonin, G.P. Schedrovitsky, E.A.

Yaroshenko, E.S. Zair-Bek et al.) demonstrates that there is no unified understanding of the phenomenon. However, the research manifests some common ideas that are present in nearly each studied definition. That is the connection of learning something new that has not existed before and an effort to substantiate it by creating its design. In the 1990-ies the theory of the pedagogical design was extensively developed in works of R.I. Il'in, I.I. Il'yasov, A.A. Kirsanov, T.Yu. Lomakina, M.G. Sergeeva, Yu.S. Tunnikov, V.F. Vzyatyshev et al.

The following pedagogues and educators dealt with the design of educational systems V.S. Bezrukova, A.M. Novikov, D.A. Novikov, P.E. Reshetnikov, M.I. Rozhkov, V.V. Serikov, G.N. Staynov; with the design of the learning process as a whole V.S. Bezrukova, V.M. Monakhov; with the design of the content V.A. Ermolenko, T.Yu. Lomakina, V.L. Matrosov, V.A. Slastyonin; with the design of learning technologies L.V. Bayborodova, Yu.K. Chernov, G.V. Devyatkin, V.M. Monakhov, A.M. Pyrsky, M.P. Sibirskaya, G.N. Staynov, N.N. Surtaeva; with the design of programmes of study E.I. Sundukova; with the design of learning and methodological activity of a technical university E.A. Zaslavskaya; with the design of information and educational environment of a VET establishment O.V. Basharina; with the design of a vocational module E.Yu. Zakirova.

It's common knowledge that a learning technology should be bound to a subject in the Russian VET system. While choosing a discipline for the designed learning technology, we relied on the following parameters: compulsoriness for all VET specialities, unified requirements for its acquisition, the maximum amount of teaching load. Juxtapositional analysis of Federal State educational standards of VET (National Curriculums) of the most demanded specialities like 'Economics and Accounting', 'Nursing', 'Information Systems' etc. permitted us to disclose the following regularities:

- ✓ A technician training programme consists of the set of four bands. They are: humanitarian and social-economic band; natural science band; the band of general vocational disciplines; the band of vocational modules. The amount of teaching load for both in-class work and project or self-study work is designated for each subject in a band.
- ✓ Natural science as well as humanitarian and social-economic bands are compulsory for many specialities, however, the latter is the only one present in every Federal State educational standard of VET.
- ✓ This band has usually got four or five subjects depending on a speciality. They are 'Fundamentals of Philosophy', 'History', 'Foreign Language', 'Physical Education', and 'Psychology of Communication' if required.
- ✓ The teaching load of 'Fundamentals of Philosophy', 'History', and 'Psychology of Communication' is 48 academic hours while the one of 'Foreign Language' and 'Physical Education' is 238 academic hours.

Hence, 'Foreign Language' is the most meaningful subject in terms of the coverage of VET specialities along with the teaching load. This is why it is 'Foreign Language' that shall be selected for the design of the innovative learning technology.

While designing the learning technology, major methodological approaches that accommodate existed regularities of pedagogy should be carefully accounted (Serikov, 1994; Slastyonin, 1998). In our research we utilise the following ones: general systems theory, activity and student-centred approaches.

The main principles of general systems theory have been used to design the structure of the foreign language learning technology for VET, to identify its components, to study and forecast their interaction. We have relied on the existing fundamentals of the general systems theory (Bertalanffy, 1972; Sadovsky & Yudin, 1969):

- ✓ The fundamental of multitude permits to work out the structure of the learning technology and its components.
- ✓ The fundamental of development implies a changing set of components, their ability to accumulate information and adapt to changing conditions. It justifies the appearance of such new components as the VET students or design conditions.
- ✓ The fundamental of stucturedness and hierarchy permits to range the components of the structure of the learning technology in accordance with the established connections between them.
- ✓ The fundamental of cohesion and compatibility lets us single out common and specific tasks of the learning technology components.
- ✓ The fundamental of communicativeness determines interinfluence and interaction of the designed learning technology, the VET system and outer world as a whole.

The fundamentals of activity approach have become the basis of the design of the learning content and processual elements of the foreign language learning technology, which we also use while deciding on the form of the educational medium. They also facilitate to identify the innovative learning conditions. They are:

- ✓ The theory of staged formation of mental actions (P.Ya. Gal'perin);
- ✓ Fostering students to perform active, independent practical and mental actions with the learning content;
- ✓ The combination of the teacher's roles: a guide, a manager, a facilitator (Fruiht & Wray-Lake, 2013).

As far as these roles are interconnected with the staged formation of mental actions, the texts' instructions and tasks have been worked out with the help of recommended sequence of activities No.3 and just partially No.2. as the former generates not only the accuracy and velocity of mental actions, but also their stability and width of transfer (Talyzina, 1998). The learning module obtains the following features:

- ✓ It accounts psychological regularities of activity;
- ✓ It aims at a problem solution and thus generates students' creativity;
- ✓ It has got step-by-step instructions: plans, schemes, drafts or graphs in accordance with the chosen recommended sequence of activities;
- ✓ It suggests having either material or non-material outcomes in compliance with the provided sample (a comparative table, a descriptive passage, a drawing, a presentation, a project etc.)

As a result, the learning module always maintains its completion that provides liveliness, cohesion and may be regarded as an effective way of goal-setting training (Khutorskoy, 2003). Besides, it gives the students a possibility to retain the learning content and patterns of learning activity that makes the educational process personally meaningful and internally motivated.

The works of Ch. Buhler, V. Frankl, A. Maslow, C. Rogers et al. reveal a unique and integral personality that tends to realise its full potential, i.e. reach the level of self-actualisation. Such personality

is ready to acquire new experiences and able to make an informed and responsible choice. Favorable environment and supportive education directed to its interests, aptitudes and inclinations are necessary to disclose its full potential. Based on these propositions, the fundamentals of the student-centred approach have been exploited in our research while designing the new elements of the learning technology structure, the course themes, the module content for the general and vocational blocks, and also when transferring stress on to students' independent in-class activities and self-study. These fundamentals are:

- ✓ Personal goal-setting, which is the basis for the introduction of the new element 'Students' personal goals' in the component of 'Educational Goals';
- ✓ Free choice of individual educational trajectory, which we've used while selecting 'Foreign Language' course themes along with transferring stress on to students' independent in-class activities and especially self-study;
- ✓ Metadisciplinary basis of the educational process has been applied for the development of the vocational modules, selection of raw materials for the general modules along with a view of cross-curricular links inside and outside the humanitarian and social-economic band.

Summarising the methodological foundations of the research, we manifest general systems and activity theories along with the student-centred approach as its major theoretical landmarks.

Essentially, there is one more paramount remark that the educational process shall be designed with a fastidious regard of social and psychological peculiarities of those who teach and learn (Gur'ye, 2004, Lu & Tyan', 2015). This is why, before designing the foreign language learning technology for VET students, we have studied and considered their social and psychological peculiarities.

The generation that was born in 2000 and further grew up and was brought up in a state of flux, which featured powerful shifts in all society spheres, rise and development of new processes, first of all, globalisation and informatisation. Socio-economic settings are imprinted in a person's social and psychological selves, the mode s/he participates in social and political life. Therefore we have extensively used the achievements of related sciences like philosophy, sociology and psychology along with empirical observations and the results of own sociological surveys.

The mentioned here above study allows clarifying a range of peculiarities of VET students: their social status and hierarchy of values, the attitude towards VET and future job perception (Hooley et al., 2014; Breen et al, 2014; Huber et al., 2014), new social qualities, the experience of learning of a foreign language, the influence of the Internet and technological devices connected to it (Kukulska-Hulme, Traxler, 2005, Gabarre et al, 2014), personal qualities, internal motivational sphere, novelties of the leading activity motives, new features of cognition.

Our findings are supported by the outcomes of Marc Prensky's (Prensky, 2001, Kukulska-Hulme, 2006) abundant data and research that prove the generation of millennials that he has so keenly coined the digital natives acquire and process information differently from any previous generation. Their representational systems and mnemic processes can acquire and retain information received through audio or visual channel rather than through texts (in signs) widely used in traditional teaching. This is this that may sometimes cause serious difficulties in information acquisition, its interpretation, and retention.

6. Findings

The major outcome of the research is the designed universal three-component learning technology of foreign language for VET educational establishments, which suits the parameters and characteristics of a contemporary VET student (table 1).

Table 01. Socio-psychological portrait of a VET student

№	Parameters	Characteristics
1.	Age	15 – 18 years old.
2.	Social status	Families are of lower middle class or working class origin. Parents work in construction, at factories or plants, as employees for small businesses.
3.	Hierarchy of values	Education is usually regarded as an instrumental value and is placed in the intermediate position in the hierarchy of values. The upper tiers, i.e. terminal (intrinsic) values are occupied by steady sufficient income and financial well-being.
4.	Future job perception	Most students and graduates are rather unwilling to be engaged in any kind of industrial production.
5.	Attitude to VET	is contradictory: on the one hand, it is an opportunity to maintain or improve the existing family level of education; on the other hand, the majority of VET graduates are dissatisfied with the quality of VET and ready for further education.
6.	Social qualities	Russian millennials are highly critical, quite pragmatic, exhibit relative social passiveness and rigidness toward entering 'adult' roles along with their sufficient realisation; possess comparatively higher degree of adaptation as well as somewhat narrow scope in its traditional meaning.
7.	Experience in learning a foreign language	9 out of 10 college applicants have been learning English at secondary school. The majority is able to demonstrate either elementary or pre-intermediate level, which leave them dissatisfied. Yet, they are rather incapable of self-studying or using the Internet educational resources for further personal development.
8.	The influence of the Internet and technological devices connected to it	Such devices are regarded as higher status symbols, generate positive emotions, have beneficial influence and partially assume the function of socialisation.
9.	Collective or archetypical qualities	The Russian millennials possess comparatively higher creative potential, display higher functional performance and productivity of cognition, use different informational channels, while surfing the Internet, experience from moderate to high cognitive drive.
10.	Motivational sphere pecularities	These teens keenly realise the contradiction between an evident social position and ambitions moulded within the process of socialisation. As a result, there is an increase in the inner learning motivation in comparison with previous developmental periods.
11.	Novelties in the leading activity motives	Individual motives prevail over communal ones: tendency towards self-understanding and self-perfection; ambition of self-fulfillment at a socially valuable job; self-esteem at work, tendency to participate in it in order for self-development, for gaining a certain position towards workmates; self-assertion; the development of certain characteristics necessary for independent life.
12.	New features of cognition	high potential for the development of practical intelligence; computerised mental activity: hypertextual organisation of cognitive structures, multivariance, nonlinearity.

7. Conclusion

Within the research, the basic notions of the theory of vocational education - objectives and content of foreign language learning at VET - have been specified and evolved. Next, scientific approaches of design of the innovative technology of foreign language learning have been disclosed and justified. Also, the criteria of content selection of foreign language learning at VET have been worked out. Then, the socio-psychological portrait of a contemporary VET student has been compiled and supplemented. Finally, the universality of the designed technology of foreign language learning has been demonstrated at a wide range of VET specialities.

Acknowledgments

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