Info-cognitive technologies in language education

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Abstract. Digitalization is global modern challenge leading to digital transformations changing of all society institutes and structures including education. This article presents rationale for the necessity of info-cognitive technologies introduction in native language-related education on the methodological bases of cognitive and cross-cultural approaches. Realization experience of cognizer idea which is an info-cognitive technology of language-culture native speaker mind verbal modeling is represented. Informational system includes the researcher’s web interface, a respondent and data bases having total information. An associative inquest for created system testing was carried out; the research was done in the Buryat Republic (Russia). Buryats are Mongolian language ethnic group remained traditional life, values-based attitude to family/nation, nature-made objects. The state of the Buryat language is rated as critical; it was added to the list of endangered world languages by UNESCO. Students aged 17-20 years old took part in this research. There were about 105 stimulus words. They found out specific linguistic consciousness and values-based orientations of native speakers, preservation of respondent’s national language code/mentality which shows the necessity of their consideration in the process of native language studying.

1. Introduction
Digitalization actively penetrate into the language education on the bases of the newest communications, computer power increase, computer systems and services working out. All these things create a huge language layer in language studying sphere: great data, neurotechnologies and artificial intellect, robotic science components and sensorics, wireless telecommunications technologies, virtual and alternate reality technologies. Digital knowledge conception reflects global character of knowledge society movement which sense is digital transformations – all systems and structures change and their integration into united ecosystem.

New informational technologies’ social practices activate educational values and cognitive motivation, promote the development of self-consciousness and this approach is especially important for language education. Many researchers consider language education as person-centered value because language is the main instrument of “future skills and competence” development (critical thinking, creativity, multilingualism, cross-cultural approach, ability to self-education, emotional
flexibility). In other words language education helps to develop all personal spheres (cognitive, emotional-moral, willing), one’s identity understanding what becomes evident firstly in language.

Language education connected with native language studies is the tendency which demands the newest communication, informational systems and services working out. Common methods and technologies of native language studying are traditional lessons, project technologies, interactive technologies (workshops, practical courses, case technology, discussion, debates, role play), media technologies (electronic resources work, presentation creation, author media text creation), info-communicative technologies (work with online exerciser, mobile apps, using play-based task edutainment, choice of authentic materials for discussion and revision).

2. Methods
We consider info-cognitive technologies working out in the sphere of language education as innovative trend in native language studying which is based on cognitive methodological bases and cross-cultural approaches.

Cognitive approach which was accomplished by N. Homski, R. Solso is aimed at mind, feeling, studying and upbringing modeling with the purpose of mental process optimization. Cross-cultural approach is the complex of principles which determine studying strategy with reference to psychology development and functioning specific character in the context of its social factors creation dependence. Cross-cultural competence – is the ability to understand the world flexibility which demands deliberate joint efforts of many modern society actors; and it is considered as basic skill of XXI century [1].

Language education informatization connected with native language studying firstly suppose linguistic consciousness computer testing working out which find out mental specific and native speaker’s value orientations peculiarities. Under the conditions of modern world national and ethnic growing differentiation process native language knowledge becomes a deficiency need and objectification instrument of subjective meanings and feelings. [2, 3]. Researchers points out that native language acquisition serves a higher and general purpose of persons spirit common intentions – “a purpose of personal self-knowledge and personal attitude to visible and invisible things around”, “any national individuality learning which doesn’t use the language as additional resource will be useless because the whole national character is impressed in the language” [4].

Digital technologies being accumulated common humanity and cultural specific knowledge provides an opportunity to come to usual native language speaker mind, to modify ethno-language mind through verbal representations. One of the central linguistic consciousness modeling idea which has got theoretical and practical realization is “the idea of cognizer creation” – semiotic mechanism (automated device) as info-cognitive computer system/technology which gives realization to possible operating relations models existing in a native speaker’s culture mind between linguistic units fixed in different associative and cognitive experiments. Theoretically cognizer is an actual (functioning) mind model of a certain language culture native speaker which means person’s verbal and cogitative activity using semiotic system such as verbal [5].

Bilingual informational and analytic system for finding out knowledge reflected in national language associative words meaning is used in this research. Informational and analytic system of taking associative experiments gives an opportunity to have access to associative thesaurus like to absolutely new object of interdisciplinary research– cognitive linguistics, computer linguistics, cognitive psychology, general linguistics, semiotics, psychology, pedagogy, sociology, cultural studies what let to analyze language and culture connection and mind and language connection. According to N. V. Ufimceva associative–verbal net built on mass associative experiments materials can be considered as personal usual language mind model [6].

For subjective semantic field and their interconnection research associative experiment is used as a way of finding out perceptions reflection specific of some event/object in native language speaker’s usual mind. Associative experiments are used since the beginning XX cent. (K.G. Jung, A.R. Luria and so on). Word associative connections handling as a linguistic unit gives an opportunity to find out linguistic consciousness inner structure specific, connection and relation deep model which appear
through speech and thinking and is the basis of “cognitive organization” of its diverse experience and linguistic consciousness. Basically informational technology of carrying out of associative psychological-linguistic experiment is examined for further usage of the results in pedagogical purposes. This info-cognitive technology can be used in language education to look after native language speaker’s linguistic consciousness, to create data base, to get educational studying resources.

3. Results and discussion
The purpose of research is language native speaker’s verbal consciousness modeling on the bases of associative experiment informational technology and the analyses to register linguistic consciousness peculiarities in language education. Informational system consists of two parts: 1. Web site which is web interface for the researcher and the respondent; 2. Data base keeping all joint information. Informational technology of language-culture native speaker responder’s online survey is worked out; its tests are made up. Particular problem decided – associative survey among students was held and results analyses were made. Advantages of the online survey: resources saving (financial, labor, time); big sample size (possibility of potential responders’ wide audience sample); intake evaluation high speed (large number of responder’s can be sampled for a short period of time); possibility of early response (for example instruments change, involving of responders from other regions by giving them the access and so on); coverage (borders and distance crossing); relevance (independence) of communication meaning lower level of influence of an interviewer on responder, possibility to give the variety of answers; high level of trust (based on an anonymous character of online environment); coverage of object field (possibility to examine closed topics for public discussion); organizational flexibility (responder himself chooses time and place of participation).

Associative survey was held for testing of created system. A set of stimulus words was prepared. The research was held in the Buryat Republic (Russia). Buryats are Mongolian language ethnic group remained traditional life, values-based attitudes. Buryat students of Buryat State University aged 17-20 years old took part in this research. Students visited the site and during time they chose themselves gradually wrote down words, word combinations which associated with original notion (stimulus word). There were 105 of stimulus words at all. Additionally researcher informed that spelling and interpunction and even literacy rules were not matter according to the modern actual state of the Buryat language (multidialectal character, low knowledge of the Buryat language by the young). The whole survey was not more than 20 minutes in general for the first student’s associations become an object of analyses. Reactions on stimulus words were taken. On the bases of these results preliminary conclusion can be done. Students’ associations are going through two main ways: syntagmatic when to the word “child” they give different definitions and other parts of speech (child – big, little) in such a way that one can build a line phrase from these words-associations; paradigmatic when they take up associations to a stimulus word which reflects its categorical (house — building; house — street) or reflecting parts meaning (house — window, door) or subjective meaning of this notion understanding (house — happiness, glory) and so on. Syntagmatic associations’ predominance shows Buryat language speakers’ vocabulary poverty (on the next step of the research possibly it will be needed to give words in Russian). Some words are translated into the Russian language. There are also a lot of associations which could be occasional or oriented on word sounding (hara-shara) or consistently connected words on the Buryat language (aba agy). Associative experiment results give opportunity to say about our responder’s distinctive linguistic consciousness related to wide social-psychological contest around them, about possible changes (positive and negative) come from self and other people estimation and also about possible attitude to the world around which is predetermined by today’s young people’s mindset. Experiment results give an opportunity to judge about The Buryats’ mental system – there found out a lot of words which are ethnic key concept.

This research showed modern Buryats mental peculiarities, their devotion to traditions and customs. According to the answers given we can predict Buryats linguistic consciousness that will be creating next spheres of society during the following 30 years: linguistic, spiritual and material.
Data obtained during the experiment shows us social-psychological conditions which Buryats have their values and world attitude. “On the example of associative word field — ethnic key notions — hunjejhen (soul), jehje oron (homeland) — one can see meaning intension of Buryats mental space. Enumeration of responders’ words reactions is given on the bases of particularity principle (from the most to the list frequent). There is a translation in Russian in bolds. Content analyses of a key ethnic concept hunjejhen (soul) reflects soul meaning as “life strength” connected with archaic attitudes that can be seen in responders’ answers — “soul flies; soul should be called, strengthen, make alive; mystery-man talks to the soul”. There is association of responders’ answers — buddhist sacred Hii-morin flag — lucky horse, the symbol of person’s psychological energy.

Content analyses of a key ethnic concept jehje oron (Homeland) reflect Buryat multi identification. We found out predominance of local identification (responders speak about small motherland, name family places, points out ethnic key notion — toonto (place of disposition of family ancestors). We can mention some universal general reactions in responders’ answers (homeland, home), qualified reactions (rich, native), highly emotional reactions (heroism, protection, beauty), landscape associations (plains, mountains, nature). Representative functional peculiarities of linguistic consciousness of Buryat are “preservation of national language code/mentality under some words-reactions restriction, reaction corruption and absence that speaks about the state of the Buryat language which was added to the list of endangered world languages by UNESCO” [7].

4. Conclusion
Our experiment showed that info-cognitive technologies can be an effective instrument in language education, mean of diagnosis of cognitive strategies and ethno-cultural identity construction. According to this instrument usage there are following research questions: a) what are success/unsucess criteria of language acquisition; b) is it possible to run diagnostics of ethno-linguistic crises situation; c) what set of criteria gives educational path and how educational results can be reached. In the long run we plan to build up programed computer system to support theoretical and empirical research of native language-culture speaker verbal consciousness, computer modeling of working mechanisms of linguistic consciousness for fundamental problem solution of language education – native language studying. Besides we are planning to work out native languages Internet platform and online instruments realization on data collection which are used for evaluation of criteria of conceptual model native languages studying methodic according to modern standards and technologies needed on labor market.

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