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BASIC ASPECTS OF TEACHING AND LEARNING IN A CROSS-CULTURE ENVIRONMENT

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Abstract

It's common knowledge that today's education is becoming more open and easily accessible; consequently, it is not limited by the boundaries of countries and regions. Moreover, online communication allows the educational processes to transpire irrespective of the territorial boundaries: not only the number of students is growing, but also their cultural identities are becoming more diverse. Nowadays are facing new problems caused by different world views, specific types of educational discourse, various information processing strategies etc. This book describes the prerequisites for development in the area of cross-cultural didactics. This approach is based on research studies of differences between mentalities, ways of working with educational information, culturally-specific teaching methods and teaching techniques that determine differentiated approaches to the choice of multimedia technologies in education system. Cross-cultural multimedia didactics may be viewed as a combination of cultural, psychological and pedagogical aspects, of culture specific pedagogical discourse, unique features of ergonomic design of educational resources, cognitive and pragmatic features and specific methods and forms of teaching and, therefore, is set to become one of the most important trends in contemporary education system.

This book will be of interest not only to professional, who work in modern cross-cultural education environment, but also to a wide range of readers interested in cross-cultural communication.

Content

INTRODUCTION

By virtue of globalization processes and the availability of information technologies in our life the process of education has become open and generally accessible for the most part. Number of academic mobility programs and student exchange programs, users of online courses and programs delivered via distance education is increasing with each passing day. For all intents and purposes it means that the educational system becomes multicultural. Increasing number of people has an actual opportunity to study using educational resources of other cultures. Space of the educational cross-culture was formed with the penetration of Internet and information and communication technologies almost in all spheres of our life. In the world report of UNESCO «Investing in the cultural diversity and intercultural dialogue» (2009) it was noted that the right to education should guarantee the acknowledgement of «non-uniformity» of trainees. In the document it is said that information about types of education which people acquire worldwide and about differences in them depending on the country (sometimes even inside the country) have yet to be gathered and assessed in a systematic manner. Development of educational programs should be aimed at making the education popular via adjusting of teaching and learning processes, educational content, pedagogical training and management of the educational system to conditions at which the trainee resides. All of these demand the development of multicultural and multilingual programs based on the multiplicity of views and opinions and also on historical and cultural characteristics of all groups of the society. To develop the education sensitive to cultures we need not only experts in different subjects but also tutors having adequate knowledge in the sphere of cultural differences and intimate knowledge of these issues. Learning courses and programs including ones delivered via distance being of a mono-cultural nature as of today cease meeting the needs of trainees to the full extent. The point is how to organize the education in the context of the *educational cross-culture* to make it meaningful. We would add for ourselves that the necessity in training of experts with a degree in “cross-cultural tutor” and developed cultural intelligence is about to happen. Their functions will be connected with finding individual «settings» and tutorial support in the space of educational cross-culture.

Even now the development of information technologies theoretically gives an opportunity to create a «smart space» which enables to simulate the individual educational track. It is also should be taken into consideration that the use of opportunities of massive open courses delivered via distance, open educational resources, interuniversity exchanges, international training and etc. facilitates the development of the space of the educational cross-culture. Moreover after moving to the Bologna system in the format 4+2 we received a real opportunity to upscale current competences in a constructive way within the framework of the professional cross-cultural space.

Main directions of the educational «smartization» which should be emphasized separately:

– Sphere connected with the development of the cultural intelligence, formation and upscale of competences of tutors in the sphere of the cross-cultural didactics, study of issues of efficient work with a multicultural public.
– Perfection and results oriented integration of massive open courses delivered via distance into the teaching and learning process.
– In-system understanding of the structural forming of the individual educational track into the electronic teaching and learning system, Adaptation and application of the best world practices in this sphere.
– Problem of selection of suitable multimedia technologies and training methods for different cultural groups.
– Range of problems related to the practical assimilation of the foreign pedagogical experience;
– and etc.

As of today many tutors experience real problems working with the multicultural public. Generally it is connected with culture-specific educational practices unknown to the majority of tutors. It is beyond argument that in this situation it is extremely necessary to develop the course of the cross-cultural didactics due to which the educational process in the multicultural space can be more comfortable and efficient for all participants. This publication is designed and suitable for experts working with the multicultural public and also for all persons who are interested in the range of problems related to the intercultural educational communication.

CHAPTER 1. MULTICULTURAL EDUCATIONAL ENVIRONMENT AS A SPACE OF COMMUNICATIONS

1.1. Education and culture in modern society

During the learning process the individual is brought up within the framework of the statement of values accepted in the society. That's why the learning is considered as a social institution which key function is to replicate the culture in the society. However, the institution of learning not only transmits historically established norms and traditions but also forms itself under the influence of these factors. This leads to the differentiation of learning models in various cultural regions. Learning as well as other social institutions is not static. It can be changed under the influence of external factors: economic, political, social, cultural and etc. Moreover, at the present time there is a change in learning systems under the influence of the modernization. Transition to the society of a new breed in the sphere of learning is carried out by implementing of information and communication technologies (ICT) into the process of learning. Using of ICTs in the learning process promotes the development of the IT-infrastructure of universities creating conditions for the formation of the information and learning environment (IEE). By IEE in this work is meant a «system-organized collection of data intelligence, technical and methodological assistance inseparably associated with a human as a subject of the learning process. IEE accumulates all national peculiarities of the culture. At large it can be considered as a macro-environment. In a specific value it can be considered as a micro-environment – immediate social environment» (Taratukhina, Bleskina, 2016).

One of components which form IEE are software and hardware facilities for supporting of the learning process which is realized by implementing ICT into universities transforming both the whole learning process and separate its components. Implementation of ICT into the learning process not only meets the requirements of the information society but also provides all its participants with necessary instruments giving an opportunity to adjust and to fully function in the changed conditions.

1.2. General principles for classification of cultural groups

1.2.1. Classification of R. Lewis

Let's consider classification of R. Lewis who identified three cultural clusters: linear-active (representatives of Great Britain and the USA), multi-active (Italy and Arab countries) and reactive cultures (representatives of Southeast Asia). Further in the table below (Table 1.1) you can see distinctive characteristics of every type of cultures.

Linear-active	Multi-active	Reactive
Plan future on a systematic basis	Plan in a general context	Compare with only general principles
Currently do only one work	Do several works simultaneously	React as the occasion requires
Divide projects into stages	Leave projects to intercross	Consider the image in whole
Stick close to the plan	Change plans	Make small corrections
Impassionate	Emotional	Gently tender
In dispute base upon logics	Emotional in dispute	Avoid confrontation
Interrupt not very often	Interrupt often	Do not interrupt
Reserved gestures and mimics	Emotional gestures and mimics	Almost imperceptible gestures and mimics

Table 1.1. Classification of R. Lewis

1.2.2. Classification of G. Hofstede

Next classification belongs to G. Hofstede. He made a classification using parameters which determine the specific nature of communication in other words psychological component of human behavior:

• **Individualism/collectivism index**

High individualism index (Australia, Canada, England, France, Italy, Sweden and the USA) means concentration of the individual on himself/herself and his/her interests. High collectivism index (Greece, Russia, CIS countries, Japan, Mexico, Singapore and Venezuela) vice-versa denotes abidance of the individual to group.

• **Power distance index**

Power distance is a status dividing among members of society residing at different stages of social ladder. This index measures tolerance of the social medium to the social inequality between superior and lower individuals. Long power distance presents in such countries as Russia, France, Greece, Mexico, Singapore and Venezuela. Short power distance presents in England, Australia, Sweden and the USA. In Canada, Italy and Japan the power distance is medium.

• **Uncertainty avoidance index**

This index characterizes the risk aversion degree or the pursuance of it in other words tolerance and readiness of society to uncertainty in situation and also their stress resistance. High uncertainty avoidance index is in Russia, France, Germany, Italy, Japan, Mexico and Venezuela in contrast with Canada, Singapore, Sweden and the USA.

• **Masculinity vs. femininity index (Male and female style of business relations)**

Male type of behavior is characterized by keen competition, exactingness and pursuance of achievements. Vivid expression of manliness is peculiar to Russia, Australia, England, Italy, Japan, Mexico, the USA and Venezuela. These countries are characterized by the pursuance of gain, money accumulation and neglect of people around. France, Singapore and Sweden as representatives of female type dominant vice versa are characterized by empathy, modesty, importance of emotional comfort and altruism. Work which gives an opportunity to be acknowledged or to succeed in life is highly prized in countries with the male type. Presence of pleasant society and mutual help at work are more important in countries with the female type.

1.2.3. Classification of E. Hall

American anthropologist E. Hall compares cultures depending on their attitude towards the context under which he understands information surrounding and accompanying the event in other words something that is involved in the importance of the proceedings. He divides countries into two groups (Hall:1960)

High-context cultures (the East) are distinguished by:

• unexpressed, latent style of speech, significant and numerous pauses;

• great importance is attached to nonverbal communication and skill to “say using eyes”;

• unduly information redundancy because everything is clear as it is;

• conflict is destructive (representatives of these cultures do not like to sort things out and discuss problems personally);

• voice a complaint straightforward is unacceptable under no circumstances.

Low-context cultures (the West) are distinguished by:

• direct and expressive style of speech, distrust of silence;

• nonverbal communication is less important;

• everything should be expressed using words and clearly estimated, unspoken words are associated with insufficient information awareness of the speaker;

• conflict is creative because the discussion of identified problems and complications helps to make a right decision;

• in some cases open voicing of complaints is possible.

1.3. Examples of educational process adaptation for students from different cultural groups

Adaptation is adjusting of teaching information, methods, testing and assessment materials to the student's specific nature (adaptation of class assignments for different cultural groups) and also compilation of specific cultural elementary dictionaries in the discipline (ambiguousness of terminology in different languages). Invariable content means compilation of universal elementary dictionaries in disciplines or semantic charts. It means that constructive educational activities in the cross-cultural information educational environment will be organized in accordance with the following procedure:

1. Cultural and cognitive profiling of the student or audience.
2. General methodological recommendations for organization of the educational communication are derived based on this cultural and cognitive profile. This information will help the tutor to design the course and educational tracks for students and the specific nature of the communication in the system «tutor – student».
3. Cultural and specific models of students are derived and relevant teaching methods, types of educational content, testing and assessment materials and etc. are selected.

4. Methods and instruments of information and communication technologies relevant for the representatives of different cultural groups are selected.
5. In case of online training we designed matrix of recommendations related to creation of cultural and specific user web-interface and cultural and adaptation educational content.

1.3.1. Parameters illustrating the specific nature of the educational process for the representatives of different cultural groups (by the example of China and the USA)

1. China

1.1. General characteristics of cultural and cognitive profile Cognitive block

Specific nature of work with information	– High attention to the context; – Informational structure – «branched tree»; – Holistic thinking.
Attention	Attention «to the field»
Specific nature of making decision	– Commitment to the weighty opinion; – Involvement of people around in the process of making decisions; – Uncertainty avoidance.
Creativity	Interpretation within the framework of the existing tradition

Table 1.2a. Parameters of cultural and cognitive profile in the educational environment of China

«Emotional» (contextual) block

Specific nature of discourse	– Unity with society; – Preservation of harmony.
Attitude towards rules and arrangements	Universalism

Table 1.2b. Contextual parameters of cultural and cognitive profile in the educational environment of China

Operational block

General specific nature of activity	Mainly reactive
Attitude towards time	Time is nonlinear value (cyclical)
Attitude towards society	– Collective type of culture; – High power distance
Attitude towards the status	Origin is important
Attitude towards the ambient environment	Harmony with the ambient environment
Specific nature of communication	– High attention to the context; – Branched argumentation; – «Conclusion is evidence as well» (deduction); – Dominating genre: narrative

Table 1.2c. Operational parameters of cultural and cognitive profile in the educational environment of China

1.2. General methodological characteristics of structuring of the educational process

Types and characteristics of structuring of information	– Dominant of audio and kinesthetic style of information perception; – Tendency towards searching for common features; – Inductive approach method; – Dependence on the context; – Framing of information – full (not always distinct) image of the proceedings; – Application of intuition, image-bearing and narrative discourse
Used methods	– Receptive and reproductive methods; – Working models with educational information – forwarding of information
Specific nature of educational content	Generally textual content without any possibility to make corrections as a rule
Educational process	One-sided, centered on the tutor

Attitude towards mistakes during the educational process	«NOT OK» – mistakes are often associated with the «loss of face»
General characteristics of testing and assessment materials	– Aimed at forwarding of definite answers; – Almost full absence of tasks demonstrating the author position and creativity
Context of communication	– «High-context cultures»; – Maximum unity with the society; – Preservation of harmony
Dominating emotional parameters of discourse	Context plays a dominating role; Process «how it is said» is more important than «what exactly is said»; Avoidance of discourse confrontations
Styles of education	Field-dependent
Styles of training	Autocratic, teacher-centered
Academic language in different cultural groups	Maximum copying of the «master» discourse; Not expression of personal opinion but reference to authorities is needed; Discussions are not welcome

Table 1.3. General methodological characteristics of structuring of the educational process in China

1.3. Specific nature of communication in the system «tutor-student» (based on the model of G. Hofstede)

Ethnometric criteria	Communication specifics
High power distance	– Teacher-centered model; – The students' initiatives are not encouraged, thus initiatives come from teacher; – Communication is initiated by the teacher; – Students build their own educational pathway, which are based on the pre-specified models; – Students are not allowed to discuss, enter

	into controversy with teachers and criticize them; – The effectiveness of education depends on the teachers and regulated by them
Collectivist culture	– Students pronounce their opinion only when asked and encouraged by teacher; – Individual performances are encouraged only in small groups; – Harmony and emotional comfort are the dominant conditions in the education process; – Neither the teacher nor the student does not "lose face" in the educational communications; – The teachers can make some indulgences taking into account personal attitude
Musculine culture	– The education process is oriented at the average student; – The ability to adapt in the team is an important and valuable quality; – Such students' qualities as non-conflict, moderation in all things and good teamwork are encouraged; – Students choose subjects based on self-interests
High level of uncertainty avoidance	– Students feel themselves more comfortable with strict regulations and schedules; – Teacher must be competent in all spheres; – A using academic language in education process is a good teacher's characteristic; – Students' accuracy and compliance with the requirements are encouraged; – Teachers consider the disagreements in education process as a personal disloyalty

Table 1.4. G. Hofstede's ethnometric criteria in the educational communication system «tutor-student» in China

1.4. Characteristics of the educational content organization

In collectivists cultures a textual fundamental content without any possibility to change it by users personally and references to authorities is welcome.

1.5. Characteristics of the educational resource interface organization

Holistic (China)
Applicable to cognitive style of the user
Approach (connected with the work of the right part of brain) when the individual pays more attention to objects highlighted using contrast ratio, layout and design of the website
Cognitive style is described as dependent on the field, uniting all objects and the field in the whole; individuals with such cognitive reasoning have less analytical mind and get away with information structured for them
Prevents separation (detachment) of objects from the whole via providing parts with their interrelations. This way the user can foresee both the content (possible content) and the structure of the resource, for example, interdependent groups of text, icons, images
Design is considered from the holistic (integral) point of view reflecting more intuitive process and creating the specific system representation
Applicable to information representation: web design
Design of interface and structure of information provide wider selection range for view and examination of the website
Content is structured (organized) in the context of the whole (all) trying to connect different parts: everything is relative and understood within the framework of the context
Architecture of information can be presented using the website map which clearly (understandable) visualizes the site hierarchy. Site creates the feeling of the inseparability from the content and design
General informational design intuitively understood based on thematic relations among groups.

Metaphors of the website have different stages representing (describing) categories

Table 1.5. Characteristics of the educational resource interface organization in China

2. The USA

2.1. General characteristics of cultural and cognitive profile

	Cognitive style	Impulsive
Cognitive parameters	Specific nature of work with information	– Low attention to the context; – Informational structure – system-organized elementary blocks; – Analytical thinking
	Attention	Attention to objects
	Specific nature of making decision	– Commitment to personal opinion; – Loyalty to uncertainty
	Creativity	Innovativeness
Contextual parameters	Specific nature of discourse	Expression of individuality
	Attitude towards rules and arrangements	Particularism
Activity (operational) parameters	General specific nature of activity	Linear-active
	Attitude towards time	– Time is vector, linear; – High cost of time
	Attitude towards society	– Individualistic type of culture; – Short power distance
	Attitude towards the status	Personal achievements
	Attitude towards the ambient environment	Control over environment

	Specific nature of communication	– Low attention to the context, cognitive style of communication; – Linear argumentation based on facts; – «Fact-fact-fact-conclusion» (induction); – Genre: discussions and debates

Table 1.6. Parameters of cultural and cognitive profile in the educational environment of the USA

2.2. General methodological characteristics of structuring of the educational process

Types and characteristics of structuring of information	– Dominant of verbal, audio and visual type of information perception; – Tendency towards abstracting and searching for differences; – Deductive reasoning; – Independence on the context; – Framing of information – clear classification and tree of knowledge
Used methods	– Heuristical and problem-searching methods; – Working models with educational information – interactive, discussions, debates
Specific nature of educational content	Interactive, multimedia, available for addenda and correction
Educational process	Interactive, centered on the student
Attitude towards mistakes during the educational process	«OK» – mistakes are natural part of the educational process
General characteristics of testing and assessment materials	Selection of one opportunity among several ones or the author position to the question

Context of communication	«Low-context cultures»
Dominating emotional parameters of discourse	Expression of individuality
Types and characteristics of structuring of information	Discussions and debates
Used methods	– Content of the message is primary, context is secondary; – Cognitive style of information exchange; – Moderation, restraint
Specific nature of educational content	– Linear argumentation based on facts; – «Fact-fact-fact-conclusion» (induction)
Styles of education	Field-independent
Styles of training	Tutor – coach, process centered on the student
Academic language in different cultural groups	– Maximum expression of the individuality; – Searching for the unusual, new one; – Departure from generally accepted traditions; – Discussions are welcome

Table 1.7. General methodological characteristics of structuring of the educational process in the USA

2.3. Specific nature of communication in the system «tutor-student» (based on the model of G. Hofstede)

Ethnometric criteria	Communication specifics
Low power distance	– Student-centered model. The students' initiatives are encouraged; – Communication is initiated by students; – The teachers encourage students to choose their own learning pathway;

	– Students are allowed to discuss, enter into controversy with teachers and criticize them; – The effectiveness of education depends on the continuous feedback and interactivity
Individualist culture	– Any question can be discussed; – Individual performance and the expression of own standpoints are always encouraged by teachers; – The confrontations, the clashes of opinions and disagreements are an average part of the education process; – "Lose face" is a characteristic of professional incompetence; – There are equal requirements for all students
Masculine culture	– The education process is focused on the best student; – Students' academic achievements are valuable; – Students' ability to present own achievements and own uniqueness are valuable; – Students' emphasizing from the team is encouraged; – Students choose subjects based on its usefulness for the future career
Low level of uncertainty avoidance	– Students feel themselves more comfortable without strict regulations and schedules; – Teacher can tell that he does not know something; – A using simple language in education process is a good teacher's characteristic; – Students prefer more innovative approach in education; – Teachers consider the disagreements in education process as stimulating factor

Table 1.8. G. Hofstede's ethnometric criteria in the educational communication system «tutor-student» in the USA

2.4. Characteristics of the educational content organization

– Interactive, author, unique content replenished by users is welcome;
– There is an opportunity for discussions, communication with the tutor and chats with colleagues;
– Moreover, users prefer various content with video, animation without dominant of text;
– Communication with the tutor in social networks is allowed and welcome.

2.5. Characteristics of the educational resource interface organization

Analytical (the USA)
Applicable to cognitive style of the user
Approach (connected with the work of the left part of brain) when the individual reacts at objects of similar importance where his/her capability to see the full image is directly connected with relations and link between the background and the foreground
Cognitive style is described as independent on the field; individuals with such cognitive reasoning use analytical structuring of information in other words they consider object of the structured field as different and detachable from the field components and put them to this field
Induces to separate (detach) different objects from the context using smaller link of these objects with the whole (general), for example, distinctly (clearly) structured order of interface components with stronger base on the text
Design is considered from the analytical point of view and this way reflects the process demanding reasoning and analysis and providing the abstractive system representation
Applicable to information representation: web design
Design of interface and architecture of information as a rule do not provide broad options for the selection of view and examination of

the website content
Content of the website is structured and divided into different but interrelated components: this way the user can focus his/her attention on every independent (separate) specific object
Architecture of information can be presented using a well-ordered website map consisting of main headings and subheadings. Appearance of the website can include separate parts and objects which are valuable because of their independence and personal integrity
Informational design is presented from the logical point of view and functionally based on objects grouped under general characteristics and references. Metaphors of the website are hierarchically organized blocks of information divided into categories and subcategories

Table 1.9. Characteristics of the educational resource interface organization in the USA

New paradigm of education implies forming of personified informational and educational environment of the student. This can be realized using different types of devices, applications, separate courses, recommended and navigation services and etc. organized in accordance with statistical parameters of the student (his/her cultural and cognitive profile and strategic objectives) and his/her dynamical parameters (performance in separate subjects and specific nature of academic motivation). Therefore, the design of modern multicultural informational and educational environment is carried out not only within the framework of communication in the system human-human but also in the system human-system. In the individual context it is practical to develop the algorithm of analysis of specific nature of cultural and cognitive profile of the student and automatic output of methodological recommendations for the tutor when working with every student (modelling of his/her individual track). Information about cultural and cognitive profile of audience in the whole will give an opportunity percentagewise to see the specific nature of cognitive, operational and active student audience in the whole and in accordance with that to plan «the course de-

sign» (its methodology, content, instrumentation and estimation components). This approach in our opinion furthers the consideration of the individual specific nature of students and constructive transfer of knowledge and also more realized modelling of the competency model in accordance with demands of the labor market.

1.3.2. General characteristics of the educational communication and personalization of the information educational environment

Country	General characteristics of the educational communication and personalization of the information retrieval system
The USA	Student has an opportunity to personally select subjects and to structure the curriculum depending on preferences; Tutor fulfills an administrative and curatorial function, lends face-to-face and remote individual support including but not limited to emotional and encouraging, keeps track of the personal potential unlock and helps to make an individual educational route.
Europe	Student personally selects the educational strategy having an opportunity to select interesting courses and to make personal schedule; Tutor fulfills an educational and pedagogical function. Tutor's work is directed to the development of the self-analysis skill and professional competence of students; thus the tutor takes care of the student when he/she realizes the selected educational strategy; – highly-developed communication system including both formal and informal communication gives an opportunity to provide the constant support of the student when he/she tackles tasks; Students are both consumers and creators of the educational content. Mixed educational models such as "flex" and "online-driver" are used including problem and modular training. Virtual educational environments VLE and project technologies PBL are also involved;

	In the context of multimedia formats we can observe predominantly audio and visual content and also using forums, e-libraries and blogs; it is also worth noting that students and tutors
Malaysia	Student-centered models and making individual educational routes at this stage are not realized in this culturological group. We can separate the following characteristics of the educational model: – student and tutor work in the system "We-They"; – tutor is a guru; he/she fulfills classic functions and carries out consultative work; – training is carried out in the form of modules and courses. In educational institutions models of traditional education with web-support are also used with the implementation of the e-learning concept, "Face-to-FaceDriver" model; – communication is carried out via Internet using e-libraries, audio and video materials, online courses, LMS systems are developed and applied.
China	High stance of distance between the tutor and the student, ill-developed communication system (communication generally using e-mail). Repositories with articles and books, e-libraries, online-discussions, basic educational content has a text form, nevertheless visual materials are used more often.
Japan	Majority of Japanese students are passive students. In the Confucian set of values which is the basis of culture and society in Japan tutors are authorities, guru and the student cannot get into the argument. That's why in the typical educational model of Japan students will rarely use independent and critical reasoning or a problem approach. Tutor will lay emphasis on learning of the specific field of knowledge without paying attention to the development of creative reasoning, discourse, self-analysis, development of the personal point of view. Student only partially participates in projecting of the personal track (selection of subjects). Generally, he/she is a passive player of the educational process;

	Tutor is a guru. He/she fulfills classical functions and carries out consultative work. Training is built generally using traditional methods, model of lectures and seminars, mixed educational model is applied in several universities; Visual component of the social interaction, context plays an important role. Application of video-lectures, 3D virtual environment, 3D video-conferences, open educational resources, mobile platforms.

Table 1.10. General characteristics of the educational communication and personalization of the information educational environment

1.4. Cross-cultural didactics – learning theory in a cross-cultural environment

Cross-cultural didactics – the theory of constructive education in polycultural educational environment. Subject of cross-cultural didactics will be a teaching and learning process organized in polycultural environment, methods and form of its organization. Fundamental basis of cross-cultural didactics will be the following areas: mission and values statement of the teaching and learning process in every cultural group; culturally specific characteristics of cognitive activity, training (learning) styles typical for every cultural group, specifics of pedagogical discourse, methods and materials in cultural specific key. In essence, a global education unites different educational systems and models. Polycultural educational environment in essence is an **educational cross-culture**: it is a field including a collection of various informational and pedagogical environments being in the condition of cooperation in the form of the educational communication and educational activity with/without the «diffusion» property. In this context one of objects of didactics of cross-culture is to select methods and to organize the educational environment to fulfill purposes and objects of education of the individual.

Many domestic and foreign researchers consider the range of problems affecting integrated processes in education and whether or not studying the education in the comparative style. It is obvious that such courses of pedagogical science as comparative pedagogics, ethno pedagogics, ethno psychology and also a series of such subjects as cross-

cultural psychology and cross-cultural management make a substantial contribution to the critical comprehension and strategical transformation of modern pedagogical science and practice. We shall consider below the background for the separation of cross-cultural didactics in the independent style out of the context of related discourses. Representatives of **cross-cultural psychology** set themselves a task to comparatively analyze psychological parameters of representatives of different cultural groups to identify specific and invariant indices of mentality and behavior. Series of similar problems are considered in line with **psychological anthropology**. Its main objective is to analyze social and cultural life in the context of psychological mechanisms operating in people's mentality. Centerline of **cultural psychology** is to consider the complex of cultural models, scenarios and psychological factors responsible for the individual's behavior. In this case the individual's mentality and behavior are predominantly of social and conditional nature. Next style is **ethnocultural psychology** which represents a complex description of cognitive and psychological features of people in terms of local culture, within the framework of the own unique cultural environment. Followers of this style consider it necessary to describe the people's mentality and behavior in terms of local, regional culture because they are understood as bearers of this culture within the framework of their own unique cultural environment. D. Matsumoto points out that boundary dividing cross-cultural, cultural, ethnocultural psychology and "taken sides" psychological anthropology in deed and not in name are very obscure despite attempts of several representatives of these schools to strictly set them against one another. Prominent representatives of this series of styles are D. Matsumoto (Matsumoto, 2011), M. Cole (Cole, 1997), G. Gay (Gay, 2003), N.M. Lebedeva (Lebedeva, 2011) and etc. It is obvious that in the context of interest to us it is difficult to overlook the works in the sphere of the theory of cross-cultural communication – S.G. Ter-Minasova (Ter-Minasova, 2000), E. Hall (Hall, 2011), L. Samovar, R. Porter (Samovar, Porter, 2010) etc. and works of theoreticians and practitioners in the sphere of cross-cultural management (G. Triandis (Triandis, 2011), R. Lewis (Lewis, 2000), G. Hofstede (Hofstede, 1997), S.P. Myasoyedov (Myasoyedov, 2009)) and etc. Many researchers studied different aspects of *ethno-culturology* which are also important when understanding polycultural integrative educational processes, for example, Lotman Yu.M. (Lotman, 1992). Group of researchers studies problems of cultural in-

telligence development and intercultural (cross-cultural) competence, for example E. Khakimov (Khakimov, 2012) and etc. As far as the problem of **ambiguity of used terminology** in the considered context is concerned**,** Syrtlanova N.Sh. (Syrtlanova, 2008) noted that the ambiguity of understanding of process and essence of multicultural education gives an opportunity to consider this concept in the context of several styles. The author notes that the content and essence of multicultural education can be discovered using the series of concepts: ***intercultural education; multiethnic education; bicultural education; polycultural education; multicultural education***. In the book the author emphasizes repeatedly the fact that in the modern pedagogical science there is no unambiguous definition of the educational process in the polycultural context. That's why the following synonymic row is used: multicultural, polycultural and etc.

In Western Europe, a term intercultural education is widely used. It implies preparation of students for coexistence with representatives of different cultures in single educational environment via forming tolerance and cognitive flexibility. Multicultural education is widely used in USA and Canada and assumes familiarization with other cultures for uniting people belonging to different cultures and having different systems of values, worldviews, styles of behavior. In Russia and Eastern Europe, a concept of polycultural education is used. It is an education furthering acquisition of knowledge about other cultures and discovery of general and specific things in cultural values, training of tolerance and respect.

I.S. Bessarabova claims that materials of the American authors give an opportunity to talk about the absence of the common approach to the determination of polycultural education. The author claims that the basic idea traced in approaches of scientists resides in the fact that ***polycultural education is primarily a process*** but not a product (Bessarabova, 2012). Thereafter furthermore of the above mentioned in the modern western pedagogical science in the context of interest to us the following lines of research can be noted:

Processes which could anyhow further the **efficient education taking into account the cultural feature of trainees** were studied in the following works: Banks (Banks, 1994), Gay (Gay, 2003), Ladson-Billings (Ladson-Billings, 2001). **Roles of interrelations between school and culture** («home» culture) were studied heretofore (Gay, Jordan [Jordan: 1985], Ladson-Billings, Nieto [Nieto: 2003]). **Inter-**

relation of cultural and race brackets and their influence on educational practices was described in the following works: Chapman (Chapman, 2008), Howard (Howard, 2008), Ladson-Billings (Ladson-Billings, 2001). Education problematic of ethnic minorities was encompassed in works Coleman (Coleman, 1996), Alexander (Alexander, 2002). Researchers noted that teachers should be competent in understanding of difference in cooperation styles during the educational process (styles of education, cognitive styles, styles of information processing). All above mentioned aspects give an opportunity to emphasize several styles furthering the development the area of cultural and relevant pedagogics:

- cultural correspondence;
- cultural congruence;
- cultural «response».

G. Ladson - Billings introduced a concept **cultural and relevant pedagogics (Ladson-Billings, 1995)**. Methodology of this style includes sensitivity to cultural nuances, opportunity of integration of cultural experience, understanding of educational environment. The following main components of cultural and relevant pedagogics can be emphasized:

1. Understanding of own identity in polycultural educational environment.
2. Study and implementation of best practices in this sphere.
3. Development of such indices as styles of education, styles of training, acknowledgement of cultural variability of psychological processes such as motivation, values, specifics of communication.
4. Education (specifics of multicultural educational content and multicultural educational communication)
5. Principles of structural interaction of teachers and trainees.

Modern western researches also deal with the problematic of polycultural education against the following styles:

- Perspectives of development and transformation of the role of teachers in the system of higher education online under the conditions of the educational cross-culture.
- Genesis and functions of national and professional (interdisciplinary) cross-culture. Search for innovative didactical models in the environment of the educational cross-culture.

– Specifics of the development of cross-cultural competence of students via coaching.
– Features and problems of the development of the cultural intelligence and cross-cultural competence of the trainee.
– Cross-cultural competence of teachers, studies of the cross-cultural competence from the perspective of multicultural and global education.
– Problematic of structural interaction among trainees and teachers from different cultural traditions.
– Features of cultural and special online courses.
– Specifics of conflict situations appearing during the educational process and based on cultural differentiation.
– Different aspects of academic adaptation of students and Ph. D. candidates from different countries.
– Features of academic achievements in different cultural contexts.
– Cultural features of psychical processes involved in the educational process and their influence on the task performance speed.
– Problems in education institutions caused by the globalization and problems of borrowing of new form of education in different cultures.
– Features of teaching, training and motivation in the polycultural context.
– As can be seen from the above we can note that modern western studies are directed to:
– study and development of the cultural intelligence;
– forming of cross-cultural competence;
– problems and methods of development of cultural and relevant and adaptation programs;
– recording of cognitive styles of education;
– recording of cultural specifics of the educational communication;
– development of cultural and specific educational content and curriculums.

1.4.1. Genesis of cross-cultural didactics

Levels for developing the subject and practice of the cross-cultural didactics are represented as follows:

1. **Level of pre-school education and level of elementary school**. At this level it is possible to train the tolerance and develop the basic level of intelligence.
2. **Secondary and senior high school**. At this level it is useful to implement and actively use practices of structural education in the

context of the educational cross-culture. Great stress should be put on the development of the «cultural intelligence» and generation of efficient communication models, training of tolerance and communicational adaptivity.

3. **Bachelor's program and master course**. Designing of IEE in the context of «modeling of future». Development of «Cultural intelligence» and generation of efficient communication models. Modeling of competence-based profile of individual in accordance with principles of personal strategic management.
4. **Post-graduate professional and additional education** is a «lifelong learning». At the level of academic and post-graduate education there is a structural modeling of IEE in the context of the educational cross-culture.

From our point of view genetically cross-cultural didactics should consist of the following blocks (Table 1.11):

1.	Educational cross-culture – diffusive penetration	National cultures, professional cultures, intergenerational cultures, informational culture
2.	Methodological grounds for the origin of cross-cultural didactics	Ethno-pedagogics, ethno-psychology, comparative pedagogics, cross-cultural psychology, cross-cultural management, cultural anthropology, cultural and historical psychology
3.	Contextually related areas of cross-cultural didactics	General didactics, multi-cultural didactics, cognitive didactics, semiotic didactics, e-didactics multimedia.
4.	Cultural and relevant educational; informational and pedagogical environments	Cultural and relevant pedagogics: cultural and relevant styles of training and styles of teaching, modeling of competence-based profile
	Principles of general didactics in the field of educational cross-culture	Who trains? Who is trained? Where to train? What for? How to train?
6.	Directions of development of cultural intelligence of the teacher	Specifics of cognitive activity in different cultures (features of cultural and cognitive profile of the individu-

		al); national psychological features. Selection of adequate pedagogical discourse, adequate educational content, selection of adequate methods and materials of education.
	Development of cultural intelligence of the trainee	Knowledge of the style of training, skills to develop the adequate communicational strategy with the «Teacher» (whether a «Human» or an «Environment»).
6	Problems arising during the process of online educational practices in the field of educational cross-culture	Incomplete synchronization of the academic activity. Different strategies of interaction with the teacher (tutor). Different ways to represent the teaching information. Cultural incompetence of the teacher (tutor).
7.	Components of the structural training in the environment of the educational cross-culture	Person-to-person Person-to-electronic educational environment Adaptive educational content – invariant educational content
8	«Smartization» of the educational environment in the context of the educational cross-culture	Cultural and adaptive interface Cultural and adaptive content Recommendation web-service related to the modeling of IEE ITS (intelligent tutoring system) with cultural intelligence Different LMS (learning management system) as an environment of efficient educational communication

Table 1.11. Genesis of cross-cultural didactics

Currently lack of homogeneity of the world educational environment in the context of objectives, values, informational adaptivity and etc. is obvious. Hereafter this will help us to understand ways to improve educational processes in the field of educational cross-culture.

1.4.2. Cross-cultural competence and cultural intelligence of the teacher

In fact, advanced "cultural intelligence" is an important component of adaptive education process (Taratuhina, Avdeeva, Mirishli, 2014). Cross-cultural competence will be formed based on the developed cultural intelligence. Concept of cultural intelligence was first developed by P. Earley, I.E. . ***Cultural intelligence*** means the competence to efficiently cooperate with the representatives of different cultures, to identify unfamiliar and multiple-valued treated signals, to receive necessary knowledge about cultural features, to foresee consequences of words and actions after communication with representatives of other cultures and to act in this context in a constructive way. Earley and Ang defined "cultural intelligence" as "a person's capability for successful adaptation to new cultural settings, that is, for unfamiliar settings attributable to cultural context" (Earley, Ang, 2003, p. 9). In accordance with the definition of researchers, cultural intelligence is a capability to understand unfamiliar contexts and to fit into them (Earley, Mosakowsky, 2004). From our point of view genesis of the cross-cultural competence consists of the developed ***cultural intelligence***, adequate self-analysis, social analysis and management of interpersonal relationships. Reflection of actual experience and renewal of "databank" (feedback) also can be added. The effectively developed cultural intelligence is the very component of the individual which gives an opportunity to quickly adapt to conditions of polycultural entropy. There is no point to mention that for teachers (tutors) working in the polycultural environment the development of the cultural intelligence is one of obligatory components of the professional individuality. From our point of view against the background of the structural approach to training in cross-cultural environment, developed cultural intelligence will give an opportunity to determine individual and cultural features of the trainee (cultural and cognitive profile of the individual) and to model the right educational pathway for the trainee with the relevant style of training, adequate methods and educational content.

Cultural intelligence is multidimensional aspect which consists from four constructs, including metacognitive, cognitive, motivational and behavioral (actively-related) elements, which compose a basic model of cultural intelligence (Earley, Ang, 2003):

1. Motivational component (motive).

2. Cognitive component (knowledge).
3. Metacognitive component (strategy).
4. Activity-related/behavioral component (action).

Metacognitive element of cultural intelligence reflects the individual's mental capability to acquire and understand cultural knowledge (Van Dyne, Ang, 2008). Relevant abilities include planning, regulating, monitoring, and revising mental models of cultural norms (Ang et al., 2007). Cognitive element reflects general knowledge and knowledge structures about norms, practices, and conventions in different cultures (Van Dyne and Ang, 2008; Ang et al., 2007). Motivational aspect reflects the capability to direct and sustain attention and energy toward learning about and functioning in situations characterized by cultural differences (Ang et al., 2007). And behavioral one reflects the capability to exhibit appropriate verbal and nonverbal actions when interacting with people from different cultural backgrounds (Ang et al., 2007). Thus, teachers should be able to understand cultural constructs, know their students' cultural norms and values, aim to constructive knowledge transfer and interactions with them and develop own cultural competence.

In the environment of educational cross-culture it is important to consider:

– Functions of cultural intelligence.
– Development methods of cultural intelligence.
– Measuring methods of cultural intelligence.
– Cultural intelligence and its functional role in the educational process.

We introduce the model of cultural and relevant intelligence of the teacher (Model «CRIT») (Table 1.12).

One of efficient methods of development of cultural and relevant intelligence of the teacher is an intercultural training.

From our point of view for the quickest adaptation of teachers it will be useful to apply cultural assimilator directed to the adaptation for training in the virtual polycultural environment.

Intercultural competence of the teacher (tutor) working with the polycultural auditorium shall be formed taking into account:

– Psychological and didactical problems in the cross-cultural context;
– Culturological specifics of ergonomic design of electronic workbooks and environments;

Cognitive – emotional and operational components of educational communication	
Style of training	**Style of teaching**
Understanding of general specifics of cognitive activity of representatives of different cultural groups	
Organization of educational content	
Organization of educational methods	
Specifics of pedagogical discourse	
Features of materials	
Reflection and structural feedback	

Table 1.12. Model CRIT (cultural and relevant intelligence of the teacher)

– National specifics of the educational content;
– National specifics of forms of educational communication and types of discourses.
– Other technologies for the development of cultural intelligence.

1. Simulation games

At the moment in educational practices of many countries virtual environments and simulators are used for modeling situations of inter-cultural communications to work out relevant communicational competences. This technology gives an opportunity to get into the virtual world, to choose its own icon and to communicate in real-time. In different cultures people differently regard virtual worlds. In the western concept of edutainment this technology elicited the response and went viral. E. Ogan (Ogan, 2009) explored the role of virtual environments (Croquelandia, ATL, SecondChina, TLCTS, BiLAT, VECTOR) in the formation of cultural competence and cultural adaptation. These environments use 3D technology of video games for simulation of new cultural reality including architectural row, street scenario, clothes, culture, communication, emotions. These virtual environments can be very useful for cultural adaptation. Many examples can be made for training of cognitive basics of work with another culture, practical adaptivity, adequate cooperation with representatives of other cultures.

2. Seminars and workshops related to inter-cultural communication, role-playing games, trainings and cases.

There is a «Cultural intelligence development center» (http://culturalq.com/tmpl/home/index.php).

1.4.3. Principles of Personal Cultural-Cognitive Profile Design

In our opinion, educational activities consist of operational and cognitive components. We can define a number of the following parameters, underlying analysis of the culture-related aspects of behavior, mentality, activity and determining specificity of cultural-cognitive personality profile (Table 1.13).

	COGNITIVE STYLE	Reflexive	Blended	Impulsive
Cognitive parameters	Specifics of working with information	*Attention to context* :Hi *Information structure*: trees *Type of thinking*: holistic	*Information structure*: blocks with a surface bond	*Attention to context*: Low *Information structure*: systematically organized by atomic units *Type of thinking*: analytical
	Attention specifics	Attention to «a frame»	Attention to objects into a frame. Frame plays linkage function	Attention to objects
	Decision-making specifics	Orientation to the authoritative opinion, the inclusion of others in the decision-making process, uncertainty avoidance	Orientation to the free choice of a permitted framework of society	Orientation to their own opinion, loyalty to the uncertainty
	Creativity specifics	Interpretation within the existing tradition	Creating a new, more advanced in framework of tradition	Innovativeness
Contextual parameters	Discourse specifics	Unity with collective, maintaining harmony	Variability	Expression of individuality
	Relation to the rules	Universalism	Variability	Particularism
	Relation to code of conduct	Closeness	Variability	Openness
Activity-related parameters	Specifics of activity	Reactive	Polyactive	Monoactive
	Relation to time	Time – nonlinear value (Cyclical)	Understanding the limitations of time as a resource. Cost of time: Low	Time – linear value. Cost of time: High
	Attitude to society	*Type of culture*: collectivist *Power distance*: high	*Type of culture*: hierarchical structure Power distance: average	*Type of culture*: individualism Power distance: low
	Status specifics	Significance of the origin	Depends on the situation	Significance of personal achievement
	Specifics of communication	*Attention to context*: high . *Style of communication*: branched argument. *Reasoning*: deduction *Genre*: narrative	*Attention to context*: average . *Style of communication*: mixed. *Reasoning*: intuitive *Genre*: mixed	*Attention to context*: low . *Style of communication*: cognitive, linear reasoning based on facts. *Reasoning*: induction *Genre*: discussions and debates

Table 1.13. Basic parameters of cultural-cognitive personality profile design

1. Specific nature of activity.
2. Specificity of information representation.
3. Specificity of mentality and attention.
4. Specificity of social communications.
5. Dominant values

In order to describe cross-cultural differences, we have to consider cultural models by G. Hofstede, R. Nisbett, E. Hall, M. Kholodnaya etc.

As we considered earlier, advanced "cultural intelligence" is an important component of adaptive education process (Taratuhina, Avdeeva, etc., 2014). Teacher with mature "cultural intelligence" will be able to identify cultural-cognitive profile of person and find appropriate communication strategy, and in case of strategic planning – an individual approach to education with suitable methods and training materials.

Since we consider mainly the educational processes of e-learning environment, we are also interested in particular those possessing "cultural intelligence." In our opinion, e-learning environment with "cultural intelligence" will enable adaptation of interface and educational content to a cultural-cognitive profile of the individual.

1.5. General features of training methods and testing and assessment materials in different cultural groups

In her researches B. Lou Leaver differentiates approaches to training as «western» and «non-western» (Leaver, 1995). Western approach is characterized with a dominant of verbal, audio and visual styles, deductive mental model, analyticity, impulsiveness (information perception is carried out at a quick rate, mated with frequent change of activity and work in groups), independence on context, predominance of abstract mental model, control frequently in the form of test cases, concentration on differences, contrast, individualization. Non-western approach is characterized with a dominant of the right hemisphere, audio and kinesthetic style, dependence on context, tendency to the search of common features, tendency to the broad picture of current developments, generality, high role of intuition and frequently unusual, descriptive and narrative idea parlance, concentration on single activity and tendency not to switch over for a long time. As can be seen from the above in general terms framing procedure of educational information in the western cognitive tradition will provide a ***distinct classification and structural tree of knowledge,*** and in the eastern cognitive tradition will provide ***narrative.***

Certainly knowing of these specifics will give an opportunity to improve the efficiency of the academic activity. Nevertheless it should not be left unmentioned the large scale of integration processes which one way or another will be reflected in partial transformation of cognitive specifics. Educational frames will be developed and acquire new semantic nuances in the polycultural educational environment.

1.5.1. Specifics of educational methods, didactic processes and class assignments

Selection of ***efficient training methods*** will result from specifics of national cognitive and educational activity. When orientating on the polycultural auditorium there can be emphasized the following aspects of pedagogical activity: selection of educational content taking into account cultural codes and semiotic context; specifics of organization of educational activity (models accepted in different cultures); assessment system (individual and collective encouragement), specifics of feedback and etc. We suppose that ***receptive and reproductive training methods*** based on the concept of the world as a series of standard «patterns» will prevail in community cultures. ***Heuristic, problem and searching methods*** are predominantly used in individualistic cultures. It is necessary to consider this issue within the framework of application of linear and non-linear methods of training. ***Linear methods*** are predominantly peculiar to eastern cultures; ***non-linear methods*** are peculiar to western ones. It should be emphasized that when transferring to the virtual educational environment these specifics also remain. We suppose that dominating cultural frames will form the basis for the selection of methods. Linear method represents a format of the material with linear statement sequence and strict hierarchical structure. Non-linear method represents a hypermedia with frequently unpredictable and interactive statement of content. As it has already been noted above different paradigms of work with information and academic content will dominate in different pedagogical cultures. Interactive format of training has long been preferred in European universities. In most eastern cultures a didactic task involves retranslation of existing content. Interactive (non-linear) process furthers cognitive flexibility. As can be seen from the above we assume that structured or formal training is peculiar to cultures of the East. In western cultures flexible and adaptive methods of work with educational information are used more frequent-

ly. It is necessary to take into account both specifics of information perception and technological aspect of training (attitude to innovations, application of new methods and etc. in this culture). In the USA, Great Britain and other individualistic cultures presentations, video and other innovation formats are necessary elements of the educational process. Didactic task in most eastern cultures is to percept what is written and to model this. This approach is also typical for Russia. Text is relatable to the urgency and information of the material. Pictures and video can be used as illustrations or addition but they cannot substitute in full theoretical information. When it comes to culturally-based specifics of academic tasks, it should be noted that the latest are followed from objectives and values of national educational systems, national specifics of educational communication and etc. Taking into consideration psychological and pedagogical specifics of national educational systems, it can be noted that to a large extent specifics of educational models determine «roles» of the teacher and the trainee. If the teacher is «in the center», the academic activity is often passive (one-sided) consisting of the knowledge transfer from the teacher to students. This model is characteristic predominantly to the East where respect to the teacher does not allow disputing his/her point of view. In actual fact the Confucian educational model insists on training only by the example of the great names of the history using their experience and in such a manner to avoid possible mistakes. In the Western cognitive tradition the process of education predominantly has creative and interactive manner. Education in this context holds the variation of individuality, its uniqueness. Stress is laid on the personal enhancement, unorthodoxy of thinking, creative approach to the problem-solving.

All these matters affect forms and typology of class assignments. For example, representatives of eastern (community) cultures when answering to issues within the framework of testing generally negatively refer to issues aimed at formulation of the own point of view. In western (individualistic) cultures vice versa issues aimed at the knowledge of great quantity of theoretical information do not attract any interest. Theoretical information is used on a limited basis. At the same time a great quantity of cases and practical tasks intended for the forming of flexibility skills, adaptivity to abnormal situations, creativity are used. Test with the selection of one opportunity out of several for example is widely used in electronic educational resources of the USA. With the purpose of these tests to be peak operating for representatives

of other cultures it is necessary to understand how well instructions are perceived and adapt them for national cognitive specifics. In western cultures mistakes are regarded as normal part of the academic activity while in the East they are practically inadmissible (synonymous with «loss of face»).

For example, if the trainee is the representative of culture with lower figure of the power distance than the teacher, then he/she will expect from the teacher informal relationship assuming exchange of views, discussion of mistakes to which the teacher will be not ready. Because of this there will be no exchange of necessary information and instructions which can affect the further teaching process. Representatives of cultures which are characterized with the high level of ambiguity aversion do not accept ambiguous situations and to the extent possible avoid them. Ambiguous situations and changes are regarded as undesirable phenomena. Representatives of these cultures are prone to prefer structured, routine and even legalistic way of task performance. When using interactive forms of training in cultures with long power distance it is necessary to exercise control over the process. However, in cultures with short power distance this format is often not so efficient. During team work and joint resolution of cases by representatives of cultures with high index of individualism it is necessary to have a competitive spirit, opportunity to express opinion, individual opportunity to make decisions. Representatives of community cultures vice versa need quiet atmosphere and top-quality technical means for group cooperation. Summarizing the talk we cite studies of G. Triandis in which relation between cultural and cognitive specifics and the character of direct educational processes is described:

– Representatives of different cultures use in the training process different knowledge and skills which in other cultures could be interpreted ambiguous: one and the same answer to the question can be regarded as rational in one culture and «irrelevant» in another one.

– Control tasks should not be universal.

– Differentiated motivation during training when performing tasks can be different. For representatives of one culture speed is important and quality is important for other ones.

– Differentiated attitude to the teacher (tutor). For some trainee he/she is «guru» for others he/she is «coach».

– Different attitude to mistakes during the educational process. Representatives of community cultures are afraid of mistakes connected

with «loss of face». For representatives of individualistic cultures it is important to participate and to venture. Mistakes are regarded as an integral part of the educational process (Table 1.14).

Criteria	«Western» cultures	«Non-western» cultures
Educational process	Interactive, student-centered.	One-sided, teacher-oriented.
Used methods	Heuristic, problem and searching methods; paradigms of work with educational information – interactive, discussions, debates.	Receptive and reproductive methods; paradigms of work with educational information – retranslation of information.
Specifics of educational content	Interactive, multimedia, available for addition and corrections.	Text content in general. Generally, it cannot be corrected.
Forms and features of information structuring	Dominant of verbal, audio and visual style of information perception; tendency to abstraction and search for differences; deductive mental model; independence on context; framing of information – distinct classification and tree of knowledge.	Dominant of audio and kinesthetic style of information perception; tendency to the search of common features; inductive mental model; dependence of context; framing of information – full (not always distinct) image of events; using of intuition; descriptive and narrative discourse.
Attitude to mistakes during the educational process	«OK». There are some mistakes which are an integral part of the educational process.	«NOT OK». Mistakes are often synonymous with «loss of face».
General features of materials	Selection of one opportunity out of several ones or the author's position in the matter.	Orientation to retranslation of definite answers. Almost absolute absence of tasks demonstrating the author's position and creativity.

Table 1.14. Some features of methodological and content organization of educational process in different cultures

1.5.2. Features and problems of pedagogical discourse in polycultural environment. Specifics of pedagogical discourse in online environment

Often communicants belonging to different cultural systems have a small «crossing region» even if they use English for communication. However, knowing basic discursive models peculiar to this or that culture it will be possible to substantially optimize the process of communication. To a large extent, the reason for this will be in the ambiguousness of the role of the teacher and the trainee in different cultures. As it has been already noted above in *Eastern cultures* the teacher is a «guru» and his/her pedagogical discourse represents a *narrative* consisting of «quīnta essentia of wisdom» which the trainee should «absorb» without reservation. In *Western cultures* the teacher is most likely *a certain attendant* – «the tutor» and «the coach» whose function predominantly relates to the activity of *targeting the trainee* and «to train» him/her to solve problems individually. In the pedagogical discourse of any culture it is possible to emphasize objectives, values, strategies, subtypes and genres (Karasik, 2002). Please note that values of pedagogical discourse will not be of universal nature for all cultures. In every lingual culture there will be some specific values forming the basis of cognitive worldview. In individualistic cultures values are expressions of own, personified position. In community cultures vice versa discourse should reflect harmony, some fusion with a group, collective. Strategies of pedagogical discourse are often consist of communicational incentives customizing the main objective of the human socialization: explaining, estimating (estimation of subjects, social realm phenomena and actions of the trainee by the teacher), controlling, assisting (support and course, maintenance of the trainee), organizing (united actions of participants of pedagogical communication, labeling and directive actions, clichéd formulas and etc.). It shall be also noted that there is a difference between individualistic and community cultures in the context of frequency of use of discourse strategies. In our opinion organizing and explaining strategies for example will be more frequently used in community cultures and assisting and controlling strategies will be used in individualistic cultures. Western communicative strategy in education is formed according to the following model: first the answer goes and then its motivation. In eastern culture vice versa first reasons for the answer go and then the answer itself. In cultures with

high index of individualism more attention is paid to the contents of the message and the context in this case plays secondary role. As has already been noted above cultures of this type are called low-context using cognitive style of information exchange. In community cultures called high-context people are addicted to laying great emphasis on how the massage was said. Therefore, we can take up the position that the emotionality level directly depends on the affiliation with this or that culture.

G. Triandis emphasizes differentiated communication strategies for different cultures. According to the opinion of the researcher the Americans usually use short phrases. In the majority of high-context (eastern) cultures this form of communication is not approved. People in the discourse of the majority of high-context cultures (Brazil, Armenia) often practice exaggeration («the most horrible», «the most terrible»). Low-context cultures are characterized as moderate and reserved.

Discourse structures in different cultures will have significant differences. Triandis notes that cultural specifics will determine the structure of the informational message (Figure1.1). For example, in Anglo-Saxon cultures argumentation is formed linearly. They specified facts which were the basis of conclusion (induction). In Arab cultures there is a general provision with confirming examples (deduction). In the opinion of Triandis the Semitic principle of argumentation (including Arab cultures) is an aggregate of parallel arguments connected with each other using one or several prepositions. As far as harmony is important for representatives of community cultures, then the communication dominant primarily will be kindly atmosphere but not the problem of reality. Representatives of individualistic cultures value facts. According to our supervision representatives of individualistic cultures predominantly use individualistic-oriented type of discourse. Representatives of community cultures prefer status-oriented one. It means that western discourse will have the structure of «fact-fact-fact-conclusion». In the eastern discourse conclusion will dominate immediately without perceptible logical evidence. Representatives of individualistic cultures generally demonstrate great flexibility when choosing discourse strategies of communication depending on the context.

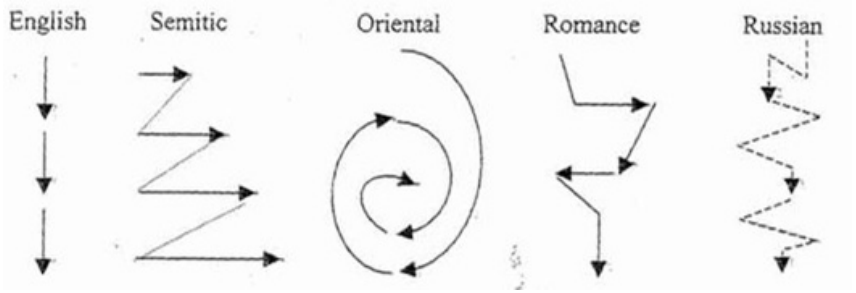

Figure 1.1. Models of discourse in different cultures (Kaplan, 1966, 15)

R. Nisbet points out that eastern students being trained in the West cannot use principles of classical rhetoric (Nisbett, 2003). They do not participate in discussions. Sphere of language and literature furthers the preservation of cognitive differences: grammar of Indo-European languages furthers the concept of the world built of atomic blocks while Asian languages give an idea of the world as a continuous and interpenetrative item. Eastern languages are high-context. Qualitative differences in reactions confirm propositions that when solving the same issues representatives from the East and the West will activate different cognitive processes.

It is obvious that specifics of academic writing in different cultures will not be universal and be a direct consequence of accepted communicational models in the system «teacher-student» and, also, peculiar to cognitive models of this cultural group. Let's begin with the fact that different genres of academic writing are used in cultures with high index of individualism – essay – expression of individual position is a matter of discussion with recognized authorities in this sphere. In cultures with high index of collectivism it is usual to develop the material based on authoritative sources and generally for these texts absence of distinct discussions when stating is peculiar. Different attitude to adoptions: in cultures with high index of collectivism it is usual to copy the style of stating of «authorities», in cultures with high index of individualism it is usual to value the originality. The training process of academic writing in different cultures is organized in different ways:

– In cultures with high index of individualism this process is organized in special centers or components of the curriculum
– In cultures with high index of collectivism this process is organized in the process of communication with the research supervisor

One of paramount problems connected with cross-cultural educational environment is a problem of quality and adequacy of feedback (timeliness of responses, degree of drafting precision of objectives and tasks by teachers (tutors)) what to a greater degree is also conditioned of the cultural context.

As can be seen from the above there are following development tracks of cross-cultural didactics:

– understanding of objectives and values of education of different cultural groups;
– features of national psychology (national character, specifics of thinking, epistemology, behavior and activity);
– specifics of representation of the educational content;
– specifics of relevant methods, materials;
– specifics of pedagogical discourse and academic writing;
– specifics of educational communication in the system «teacher-student» in different cultural groups (Table 1.15).

Types of cultures	**Individualistic cultures**	**Community cultures**
	Low-context cultures	*High-context cultures*
Objectives and values of discourse	*Expression of individuality*	*Maximum unification with the collective, preservation of harmony*
Dominating genres of discourse	*Discussions and debates*	*Narrative*
Dominating emotional parameters of discourse	*Content of the message is more important than the context. Cognitive style of information exchange. Moderation, reserve*	*Context plays a dominating role. Process ("how it was told") is more important in comparison with «what was told». Avoiding discourse confrontations*
Distinctive discourse models	*Linear argumentation based on facts. «Fact-fact-fact-conclusion» (Induction)*	*Subdivided argumentation. «Conclusion is evidence». (Deduction)*

Possible communicative and pragmatics complications	*Frequent complications with the identification of the informational content because of the ambiguity of certain lexical tokens, context-based, pragmatic and linguistic connotations and also complications connected with identification of social and cultural component for identification of the informational topic.*

Table 1.15. National models of discourse strategies and tactics used in pedagogical communication

1.5.3. «Cultures of practicality» and «cultures of value»

According to the Asmolov's dichotomous conception cultures are divided into «cultures of practicality» and «cultures of value». Function of educational institutions in cultures of practicality is to educate the individual within the framework of the generally accepted rules. During learning the student receives the background knowledge necessary for becoming a part of the society. In cultures of value vice versa the educational process is aimed at the education of the autonomous «person».

Type of culture	**Culture of practicality (China)**		**Culture of value (USA)**
Values of the culture	Balance, adaptation, consumption, exploitation, manipulation («To possess many»)		Development, search, commitment to individuality, freedom («To be many»)
Educational paradigm	Unitary, commitment to training, acquisition of knowledge, expertise and skills		Variable, commitment to the development, understanding of implications
Objectives of learning	Safety, conformance	Comfort, adaptation to typical situations, focused specialization	Form of holistic view of the world providing problem-solving in the wide range of uncertain situations, self-evolution of the

			individual, increase of the population mobility
View of life	Stationary world	World as a set of patterns	Changing world
Recommended type of tasks	Receptive	Reproductive	Problem and search
Relevant problem-solving	Accurate following of the standard stages set of problem-solving	Application of the past experience schemes, exhaustive search in memory of current solving options	Transformation, generation of new objectives and goals, tendency towards the placement of super-objectives, innovation
Tutor's behavior	Administrative, commanding, directive, mobilization		Program, objective, commitment to the development

Table 1.16. Fundamental characteristics of «cultures of practicality» and «cultures of value»

On the basis of the abovementioned characteristics (Table 1.16) we can draw the conclusion that in different cultural groups there are fundamentally different objectives and learning tools: cultural characteristics influence on not only the organization of the learning but also the arrangement of the educational communication between the student and the tutor which forms the essential component of the educational process.

1.5.4. G. Hofstede's ethnometric criteria in the context of educational communication

The socio-cultural peculiarities define specificity of communication in the "teacher-student" system in many ways (Table 1.17). By using the G. Hofstede's theory, we consider all the cultural components and determine their influence on the educational interactions. In terms of the dichotomy of criterion "low/high power distance" in the educational space, cultures can be divided into the teacher-centered and the

learner-centered one. In cultures with low power distance (US, UK, Canada, Australia, Central Europe, etc.), the central figure of education process is a student and a teacher is an accompanying figure. Teacher does not broadcast knowledge, but he helps the student to find the necessary information and conclude independently. However, in the countries with high power distance (China, Japan, etc.) the central figure of education process is a teacher who transmits information that is an undeniable and definitely highly regarded. Thereby the higher power distance the greater teacher's status and, correspondingly, the less number of discussions with him can be. In countries with a very high power distance teacher guides every student's step, however while the distance is reducing the initiative goes to the student.

In terms of the dichotomy of the criteria of "individualism/collectivism" *the education purpose* in countries with a high individualism index (United States, Canada, Australia, UK, etc.) (Asmolov, 2006) is to teach the students "how to learn" and then to obtain the necessary knowledge independently. Thereby it prepares students to an "education through life" in a constantly changing world where information becomes outdated quickly. In individualistic cultural context the students are taught to rely only on themselves and their own strength. The emphasis on the student's individual achievements in an academic environment leads to some difficulties in the group and collective interactions between students in the classes thereby teachers devote more attention to project activities and develop students' team-work skills. Also in individualist cultures tutors pose unusual tasks and creative approaches to their solving. However, in countries with a high collectivism index (China, Japan, Arab countries, etc.) education process is emphasized on the memorizing and storing large amounts of information. Also in collectivist cultures the theoretical knowledge often is not maintained by practical experience. Thus, students in these countries have a lack of practical experience and cannot apply their theoretical knowledge.

From the standpoint of cultural criterion "femininity/masculinity" we conclude that feminine cultures, such as Sweden, are focused primarily on the creating of the psychologically comfortable conditions in the educational environment and students' social adaptation. In masculine cultures, such as the United States, the education process is accompanied by a high competition among the students where academic achievements are the important trappings (portfolios, winnings in com-

petitions, etc.). Thus, in the masculine societies competitions and academic results are encouraged in the educational environment, but in the feminine ones the student's behavior is often awarded.

In terms of the "uncertainty avoidance" criterion low uncertainty avoidance index means that education process is often conducted by non-standard programs, which provide a high level of variability and fuzzy evaluation criteria. However, in cultures with high uncertainty avoidance index the education process is conducted by a strict schedule and instructions according to the educational and methodical regulations. In such countries the teachers identify the task, ways of its solving, deadlines and evaluation criteria as clearly as possible for students. Also in cultures with high uncertainty avoidance students are more likely to pursue higher education because of a sense of duty to parents and the society, and not because of personal desire.

Ethnometric criteria		Communication specifics
Power distance	Low power distance	– Student-centered model. The students' initiatives are encouraged. – Communication is initiated by students. – The teachers encourage students to choose their own learning pathway. – Students are allowed to discuss, enter into controversy with teachers and criticize them. – The effectiveness of education is depends on the continuous feedback and interactivity.
	High power distance	– Teacher-centered model. – The students' initiatives are not encouraged, thus initiatives come from teacher. – Communication is initiated by the teacher. – Students build their own educational pathway, which are based on the pre-specified models. – Students are not allowed to discuss, enter into controversy with teachers and criticize them.

		– The effectiveness of education depends on the teachers and regulated by them.
Collectivism/ Individualism	Collectivist cultures	– Students pronounce their opinion only when asked and encouraged by teacher. – Individual performances are encouraged only in small groups. – Harmony and emotional comfort are the dominant conditions in the education process. – Neither the teacher nor the student does not "lose face" in the educational communications. – The teachers can make some indulgences taking into account personal attitude.
	Individualist cultures	– Any question can be discussed. – Individual performance and the expression of own standpoints are always encouraged by teachers. – The confrontations, the clashes of opinions and disagreements are an average part of the education process. – "Lose face" is a characteristic of professional incompetence. – There are equal requirements for all students.
Masculinity/ Femininity	Feminine cultures	– The education process is oriented at the average student. – The ability to adapt in the team is an important and valuable quality. – Such students' qualities as non-conflict, moderation in all things and good teamwork are encouraged. – Students choose subjects based on self-interests.
	Masculine cultures	– The education process is focused on the best student. – Students' academic achievements are

		valuable. – Students' ability to present own achievements and own uniqueness are valuable. – Students' emphasizing from the team is encouraged. – Students choose subjects based on its usefulness for the future career.
Uncertainty avoidance	Low level	– Students feel themselves more comfortable without strict regulations and schedules. – Teacher can tell that he does not know something. – A using simple language in education process is a good teacher's characteristic. – Students prefer more innovative approach in education. – Teachers consider the disagreements in education process as stimulating factor.
	High level	– Students feel themselves more comfortable with strict regulations and schedules. – Teacher must be competent in all spheres. – A using academic language in education process is a good teacher's characteristic. – Students' accuracy and compliance with the requirements are encouraged. – Teachers consider the disagreements in education process as a personal disloyalty.

Table 1.17. G. Hofstede's ethnometric criteria in the educational communication context

1.5.5. Culturally-specific learning strategies

According to the E. Dale (Dale, 1969) and his followers' concept, education effectiveness is determined by the student's role in the education process. The most effective way of studying information is the student's active involvement in the education process: participation in discussions, presentations, simulation and implementation of practical activity. However, the least effective way of studying information is the lectures. Later, the "learning pyramid" (Fig. 1.2) was developed based

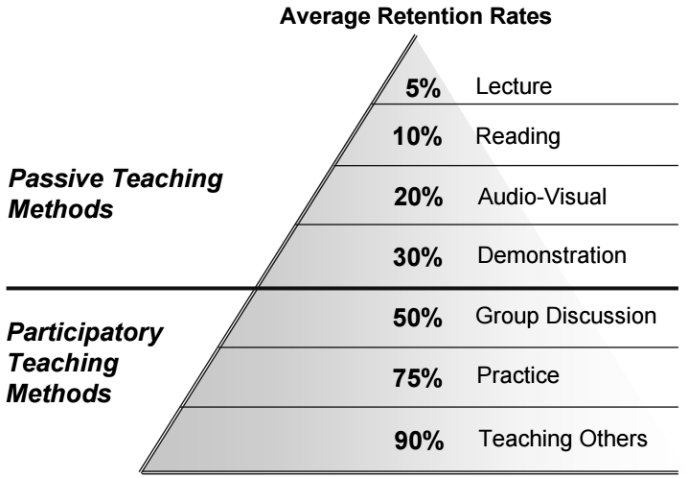

Figure 1.2. Learning pyramid (National Training Laboratories)

on the E. Dale's cone of experience, which also shows that the most effective ways of learning are the practical experience and teaching other people. However, we argue that the concept of learning methods effectiveness is valid for the Western countries, where people in education process have impulsive cultural-cognitive personality profile parameters. In non-Western cultures, mostly East Asian, the opposite situation: the learning methods which E. Dale defined as the least effective are the most productive (so-called "the East Asian learner paradox"). Thus, in our opinion the parameters of the learning effectiveness depend on the culture and its cultural-cognitive personality profile. In this book the dichotomy of "active" and "passive" learning determined by the methods of learning which are used in the education process be-

cause the different types of learning can be effective in different cultural groups.

Thereby, by using the concept of "active" and "passive" learning styles we define students in East Asian cultures as "reactive" learners and in Western ones as "proactive". Reactive students learn the information via the lectures and acquired knowledge demonstration therefore the main purpose of the passive learning is the transfer of fundamental information from teacher to student in the course framework. On the other hand, proactive students prefer to receive the information via discussions and practical experience because the purpose of active learning is the development of students' critical thinking and creativity for solving non-standard issues and tasks. Also, it is important to be note that learning style is stipulated by teacher in many ways, such as his professional and national culture, as well as the type of student's behavior.

Therefore, we can conclude that in conditions of passive learning reactive learners interact with the educational environment of the following type: educational environment influence student and form his identity and professional competences during the education process (Fig. 1.3). However, in conditions of active learning despite the fact that the educational environment still has an impact on the proactive student, they also adapt and modify it for themselves (Fig. 1.4).

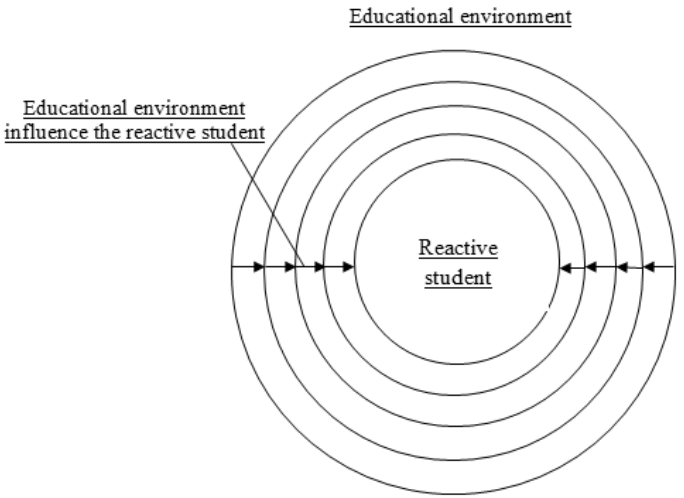

Figure 1.3. A passive learning style

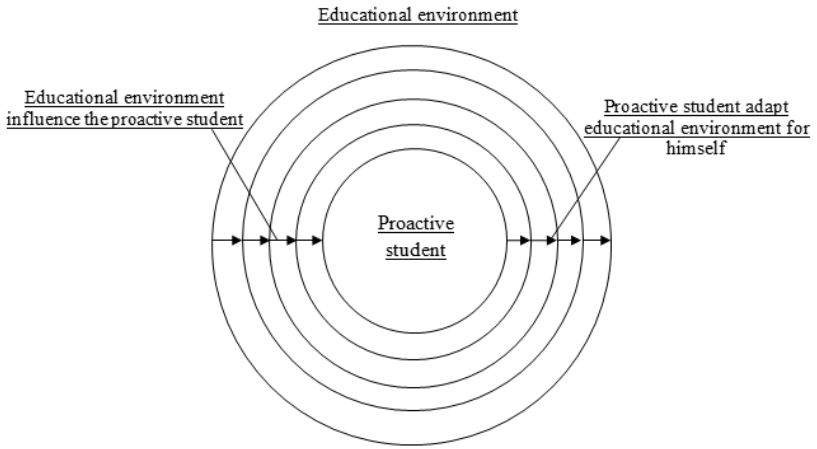

Figure 1.4. An active learning style

Thus, the learning style is largely determined by student's national culture. However different learning styles needs different teaching styles: tutors need to use culturally-oriented teaching methods and techniques considering some special cultural constructs. That means that teacher should develop cultural intelligence to create an effective educational process and knowledge transfer in polycultural students' audience.

Summarizing all considered conceptions we can determine the specifics of the learning communication between a tutor and a student for different cultural groups.

In Western countries students are autonomous enough and emancipated from tutors and create a communication field around them: students and tutors can share expertise and knowledge. Not only can the tutor share necessary knowledge with students but also students themselves suggest new ideas to tutors. As can be seen from the above communication in Western cultures is based on the reciprocal exchange of the expertise: the tutor and the student learn from each other (Fig. 1.5).

In East Asian countries the communication specifics is determined by the tutor. Students get necessary knowledge and strictly satisfy their objectives. The student's role is to obey and to correspond with the specified requirements. At a large extent strategically the communication is initiated by the tutor (Fig. 1.6).

The first case (Fig. 1.5) illustrates the specifics of the learning communication in USA and several Western European countries. The

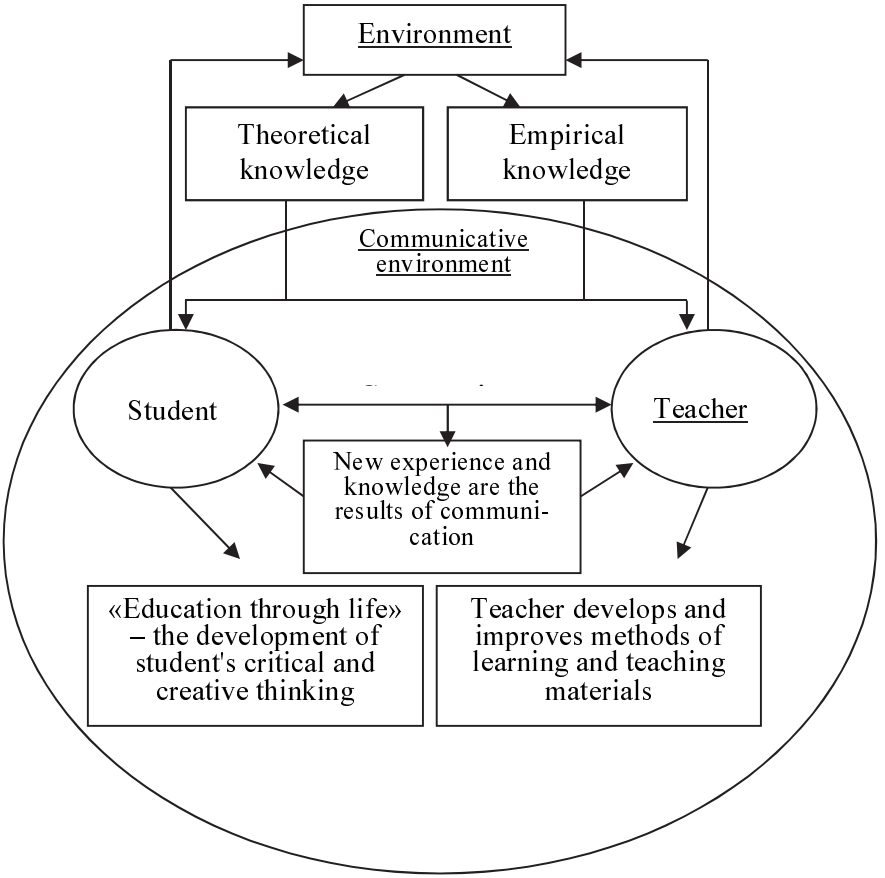

Figure 1.5. Communication specifics in educational environment in the USA and Western European countries

second one (Fig. 1.6) illustrates relations in East Asian learning cultures. It is clear that in both cases technologies of learning, put in other words – teaching methodologies, should differ from each other.

Each culture demonstrates its learning model with its own characteristics. However, in the information society the implementation of ICT into the learning process somehow modifies both the process of learning itself and communication models of its participants. Sometimes the implementation of ICT is hindered by any social and cultural barriers.

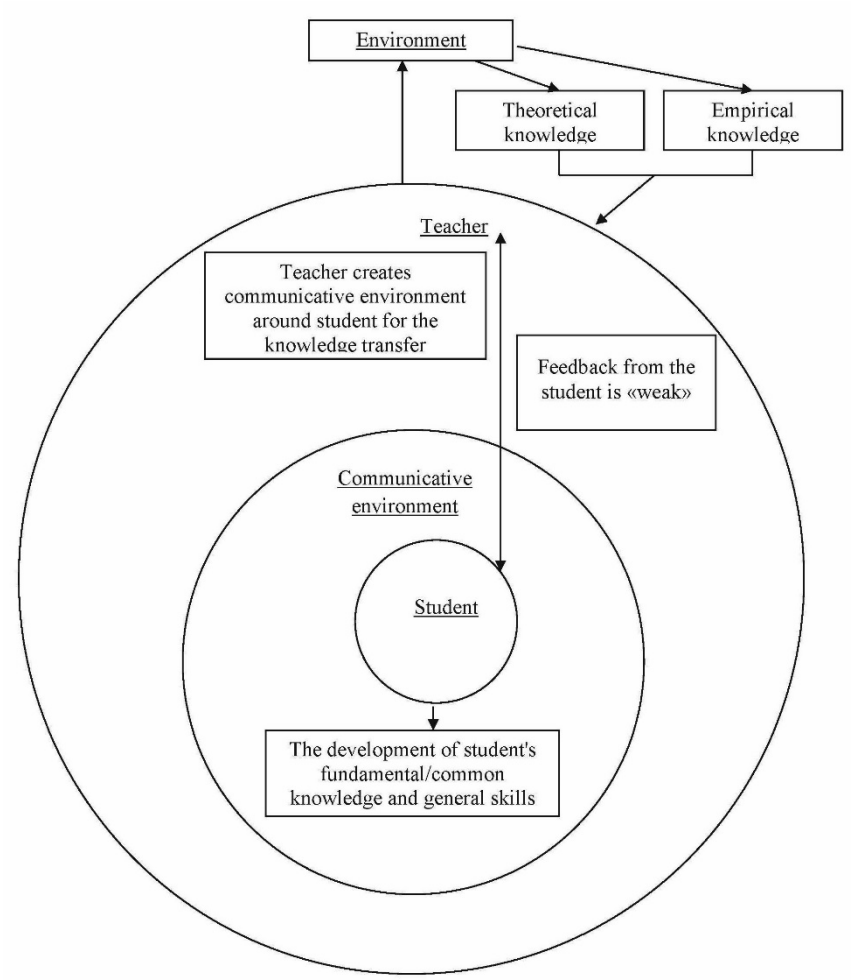

Figure 1.6. Communication specifics of the learning activity in East Asian countries

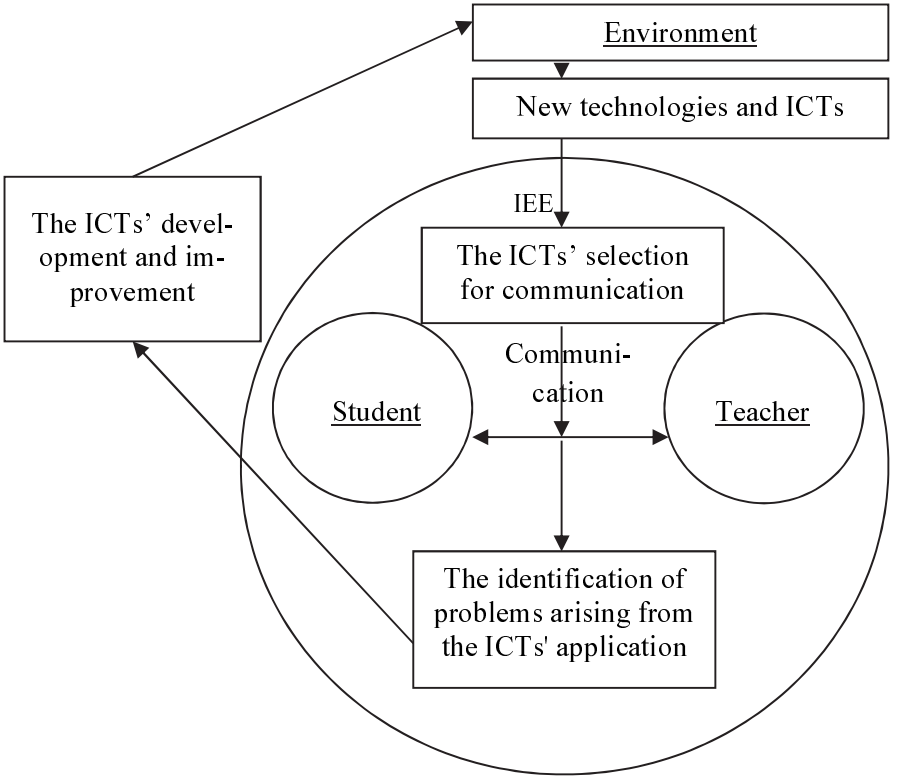

Figure 1.7. Communication specifics using ICT between the tutor and the student within the framework of IEE

1.6. The role of ICT in educational communication

Creation and widespread occurrence of ICT in the sphere of learning promoting the transition to the utilization of the interactive content as the source of information gives an opportunity to students to adapt faster to constantly changing environmental conditions. In globalization conditions of the learning process this practice is realized through the spread of knowledge and the utilization of scientific achievements in the international scale. This helps to different countries to be integrated into the world learning system and makes the process of learning open and mainly generally accessible.

One of tendencies transforming the system of learning all over the world is the transition to the mixed form of learning (blended learning)

(N.M. Creport, 2015). In the last few years the blended learning has become actively used in many universities because of its flexibility and financial accessibility. Wide-spread occurrence of the blended learning is explained with the popularization of massive open online courses (MOOC) focused on individual needs of students as against the traditional form of learning: some students prefer to study material by reading online textbooks while other prefer to look through video-lectures and other media material. The mixed approach also assumes the availability of the continuous communication of students with tutors through web-applications.

When transiting to the blended learning universities implement technologies of the personalized and adaptive training which gives them an opportunity to transform and to adapt their learning environment to the ever-increasing information volume and also to develop their innovative ecosystem for keeping up with other companies in the international market for learning services. Regardless of the fact that under the conditions of the globalization and massive informatization of the society all countries are actively incorporated of the world electronic learning system, every country chooses certain instruments of ICT which are most appropriate and optimally built-in the national model of learning. In cultures of value with an active type of learning adaptation to such changes proceeds faster than in cultures of practicality with the passive type of learning. It is based on the fact that cultures of value include Western countries. Their institutions of learning are aimed at the preparation of the individual for conditions of the responsible life in the modern knowledge society. Moreover, Western countries mainly have the high level of individualism. This fact is also fixed in learning models used by them. Many cultures of practicality (East Asian countries) actively develop electronic learning environments and are included into the world electronic system.

In information society the communication between the student and the tutor is implemented not only in the form of the direct dialog but also through instruments of ICT. This can be represented in the following way: «the tutor – ICT – the student» (Fig. 1.7). As can be seen from the above IEE is formed around the tutor and the student.

Notwithstanding the fact that the integration of ICT in the process of the learning communication is of global nature and is used almost in all universities of the world, participants of every cultural group choose different instruments which is due to the specifics of the communica-

tion learning process for every culture. As the case might be it has an influence on the selection of ICT resources in the communication activity of students with tutors.

Informatization of the learning environment besides the transformation of traditional learning models using ICT lead to the appearance of independent technologies for training using interactive resources – electronic learning technology (e-learning). Implementation of these technologies into the structure of the learning institution generates new-type: presence of the tutor becomes an unnecessary condition of the learning process because such technologies offer the learning using interactive resources for example MOOCs. It means that the communication of the type «the tutor – IEE» and «the student – IEE» (Fig. 1.8). As can be seen from the above e-learning technologies give an opportunity for the independent learning using interactive learning resources.

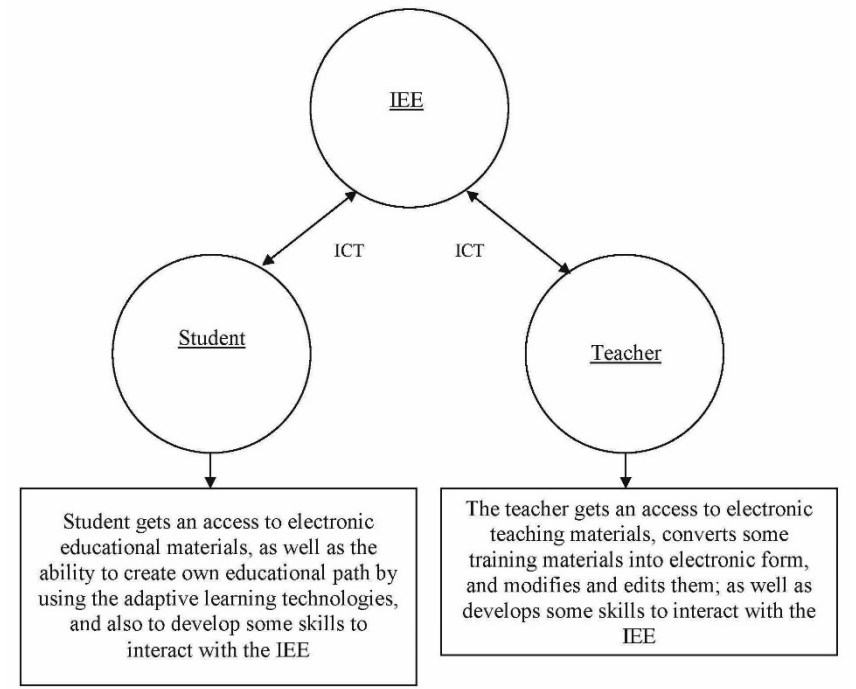

Figure 1.8. Communication specifics between the tutor and IEE and the student and IEE

Usage of ICT and the creation of IEE in the university give some opportunities to students and tutors which have become necessary in the information society. For tutors it is the opportunity to provide the student with training materials for the preparation to lessons. For example, LMS is the most preferred means of communication of the tutor with students rather than email. It is due to the fact that the tutor can once upload into the system all materials which students should use during the process of learning and open when necessary. As a consequence, students use LMS to get the necessary learning material. Moreover, students can use technologies of the mentoring and adaptive learning which makes the learning process more personalized and individual.

It is necessary to determine which methods and instruments of ICT are mainly used by the representatives of different cultural groups based on conceptions considered above (Table 1.18).

	Cultures of practicality (East Asian countries)	**Cultures of value (USA and Western European countries)**
Active/passive learning	Passive	Active
Power distance	High	Low
Individualism/ collectivism	Collectivism	Individualism
Degree of uncertainty avoidance	High	Low
Preferred ICT for the communication of the type The tutor – The Student	Most formal and traditional (e-mail)	Different types of means of communication giving an opportunity to exchange communications online (in more recent times are often used LMS, forums, social networks and etc.)
Preferred ICT for the communication of the type «the tutor – In-	– Blended learning is used but the communication of the type «tutor – student» us-	Different types of mentoring and adaptive training are used. Many learning institutions switched over

formation learning environment», «the student – Information learning environment»	ing them is more limited and formal – Technologies of mentoring and adaptive training are implemented but their utilization is complicated because of the national specifics of the learning communication[1]	to the blended learning and began offering online training (programs delivered via distance learning) and developing own online-courses

Table 1.18. Methods and instruments of ICT in cultures of practicality and cultures of value

Further we will try to describe the specifics of the utilization by students of technologies of the mentoring and adaptive learning.

As you can see in the table (Table 1.19) the students' role in cultures of practicality can be characterized as «the trainable/reactive». Role of the trainable involves becoming familiar with the fundamental knowledge of the subject. Technologies of the mentoring and adaptive learning are used as an auxiliary element during the process of learning. Using ICT the student gains access to learning materials in the electronic form. It is also possible to use MOOCs and etc. for the better learning of the subject matter. As against «the trainable/reactive» «the studying/proactive» student (the role of students in cultures of value) can use ICT not only for learning of the subject but also for the self-studying of the subject. The studying also besides getting of the knowledge using ICT establishes the individual learning path and learns both the instrument and the included context. Students learn and develop the working knowledge with technologies of the mentoring and adaptive learning.

[1] The majority of East Asian countries are mainly collectivist cultures. This fact limits the utilization of technologies of the mentoring and adaptive learning because such technologies are for the most part of individual nature. They offer to establish individual learning paths. This is unusual for the representatives of this type of cultures. It does not mean that these technologies are not used. Step by step a two-sided adaptation takes place. In due course technologies take characteristics which give an opportunity to function in the learning specifics of East Asian cultures and adapt these learning models creating an opportunity for the implementation of ICT into the learning process and developing the information learning environment of universities.

This fact gives them an opportunity to faster adapt to technical changes in the information society and to achieve the main objective of the learning accepted in Western countries – «learning through life». As can be seen from the above inference should be drawn that the concept the proactive student is much wider than the concept the reactive students and includes it. In the first instance it is connected with conditions in which the electronic learning environment is formed. Under the influence of specific cultural and social characteristics, traditions and core values accepted in the society national models of learning were formed. In conditions of these models the information learning environment of the university is built and the most appropriate instruments of ICT are selected.

	Cultures of practicality (East Asian countries)	**Cultures of value (USA and Western European countries)**
The student's role when working with technologies of the mentoring and adaptive learning	Trainable/reactive (passive)	Studying/proactive (active)
Description of the student's role	Objective of the trainable is to get fundamental knowledge on the subject. Standard, strictly regulated methods of learning are used.	Objective of the studying is not only to get general knowledge but also to develop the critical reasoning and creativity when solving problems. Besides traditional methods of learning nonstandard approaches and tasks are used.
Functions of technologies of the mentoring and adaptive learning	Used as an auxiliary instrument in the process of learning.	Used as a fully functional instrument of learning. The studying becomes familiar not only with the subject using ICT resources but also with the technology which develops the working knowledge with technologies of the

		mentoring and adaptive learning and the ability to faster fit into technical changes. The studying comprehends the included context under the conditions of which they are trained.

Table 1.19. Specifics of the utilization by students of technologies of the mentoring and adaptive learning in cultures of practicality and cultures of value

1.7. The methodical peculiarities of the education process organization in a polycultural environment

The emergence of the information environment has initiated the emergence of educational cross-culture that led to some systemic changes, which influence the transformation of the information educational environment organizational elements. We define some criteria for multicultural educational environment development in information society: communication criterion (changing the traditional forms of communication in the "teacher – student" system) methodical (the emergence of cultural-adaptive methods of educational information processing), content (differentiation and the possible heterogeneity of the educational content in the education process), information one (development and using of educational resources considering the cultural specifics of information perception and processing) (Table 1.20).

Criteria	«Western» cultures. Proactive student	«Non-western» cultures Reactive student
Information structuring forms and features	The dominance of verbal-auditory and visual information perception type; the tendency to abstraction and differences search; deductive thinking; the independence from the context; information framing – cataloging and the	The dominance of auditory and kinesthetic information perception style; the tendency to similarities search; inductive thinking; the dependence from the context; information framing – full (not always accurate) picture of the situation;

	knowledge tree	use the intuition and figurative-narrative discourse
Methods	Heuristic and problem-search methods; paradigms of educational information processing are interactive, discussions, debates; creativity defined as the creating of something new	Receptive and reproductive methods; paradigm of educational information processing is the information relaying; creativity defined as the interpretation of the existing traditions
The educational content specifics	Interactive, multimedia, available for additions and adjustments	Basically the text content where any adjustments does not allowed
Education process	Interactive, student-centered	Unilateral, teacher-centered
Attitude to the mistakes in the education process	OK – mistakes are an average part of the education process	NOT OK – mistakes are associated with “lose face”
The peculiarities of control and measuring materials	The choice of one possibility from several ones, or the author's position to the issue	Aimed at the specific answers relaying; the lack of tasks which show the author's position and creativity
Communication context	Low-contextual cultures	High-contextual cultures
Discourse purposes and values	Expression of individuality	Unity with the collective, the preservation of harmony
The dominant discourse genres	Discussions and debates	Narrative
The dominant discourse emotional peculiarities	Contents is the primary, context is secondary; cognitive style of information exchange; moderation, restraint	Context is dominant; the process of “how tell” is more significant than “what tell”; avoidance of discursive confrontations
Discursive mod-	Linear argumentation	An ramified argumenta-

els	model which is based on the facts: "the fact – the fact – the fact – conclusion" (induction)	tion model: "the conclusion is the evidence" (deduction)
Learning styles	Field-independed	Field-dependent
Teaching styles	Student-centered	Teacher-centered
Academic language in different cultural groups	Maximum expression of the individuality, search for something irregular, new, deviation from generally accepted traditions and discussions is encouraged	Maximum copying of discourse of «masters», it is desirable not to express the own point of view but to refer to the authorities, discussions are not encouraged

Table 1.20. The methodical peculiarities of the education process organization in a polycultural environment

When students enter into the foreign cultural educational environment, they adapt to it gradually under the influence of its semiotic space features. And teachers also largely consider the specifics of the institute. However, some difficulties may emerge during the process of interaction with a multicultural audience: the multicultural audience does not allow teacher to be oriented on members of one cultural group because educational information should be reported to all students' audience equally. This issue can be solved by the way of different educational methods selection for the members of different cultures:

1. The fundamental theoretical knowledge is usually transmitted via lectures. However nowadays modern technologies allow teachers to provide educational information in various formats: books, manuals, video and audio lectures, etc., respectively, members of different cultures choose the most effective ways of educational information reception for them. It is also necessary to create a thesaurus of course or a vocabulary for different cultures because some concepts may be interpreted differently.
2. Also, the seminars can be adapted to a multicultural audience. The teacher can give different tasks for students depending on their learning style. For example, proactive students prefer team works, discussions, non-standard tasks requiring creative approach, and the best students can help the teacher during lessons or explain some educational material to other students, etc. In the other hand,

reactive students prefer standard tasks and approaches to their solving. We assume that the seminars in multicultural audience consists of the practical application of the gained knowledge via the analysis of a standard set of tasks, but with the tasks complexity use less traditional approaches of solving. Thus, proactive students via reflection and debate among themselves and teachers offer solutions that they can explain to another students.

3. The types of control and measuring materials are fundamentally different for different cultures: proactive students get the creative tasks, for example, essays for expression own point of view, however, reactive students get test for basic knowledge control. Thereby, control and measuring materials, in the first case, identify students' creative thinking development; in the second one allow to check students' educational knowledge level.
4. The types of homework and projects are different: reactive students get tasks for consolidation of the studied knowledge, for example, writing an essay, learning the methods and ways of solving some average tasks; proactive students get tasks for own opinion demonstration, critical reflection of the situation, the new idea, method of solving non-standard situations development, etc.

CHAPTER 2. THE USING OF INDIVIDUAL LEARNING STYLES IN E-LEARNING

The problem of individual approach in teaching the interest of researchers for a long time and has a lot of constructive solutions. With the advent of the era of e-learning, this problem is even trickier, since we are dealing with the primacy of electronic systems. This book discusses the problems of the use of individual learning styles in e-learning. It describes existing approaches, analyze their strengths and weaknesses.

Experts in e-learning divide this conception in two courses: blended and online learning. If the online learning is fully based on IT, then the blended one involves the integration of traditional learning methodologies and IT to widen the learning process and to improve its efficiency (Pachler, 2011). Two principal elements characterizing the blended learning are a traditional form (classroom studies) and its technological support.

Nevertheless, the electronic learning assumes a considerable volume of the individual work its primary advantage is that it gives an opportunity to establish an interactive communication among tutors and students (video and web-conferences). Advantage of the e-learning is also saving of time. It is not necessary to be present in the classroom. This fact reduces the time for learning. In the corporate sector the electronic learning promoted the cost reduction for the relocation, accommodation, rent of premises and payment for services of business trainers. Moreover, the electronic learning gives an opportunity to study at anytime and anywhere. Another advantage of e-learning is an opportunity to watch video-lectures and other media materials time-unlimited. Major disadvantage of the utilization of e-learning technologies is the absence of the traditional communication between the tutor and the student. This fact prevents the development of verbal communication and teamwork skills. However, this problem can be avoided using the blended form of learning. Another disadvantage is that the high-quality electronic learning is possible only when there is a high level of motivation of the trainable which is especially necessary when going on the intact courses. It is very hard to hold attention of the trainable in this case.

Using of ICT gives to universities an opportunity to transform and to adapt their learning environment to ever-increasing information vol-

umes. E-learning technologies also open up some opportunities which were inaccessible for students and tutors earlier. For tutors it is an opportunity to provide the student with basic learning materials for the successful learning of the subject. For example, when using of the Learning Management System (LMS) the tutor can once upload into the system all materials which are necessary for students when learning of the subject. Besides using of LMS for getting necessary learning materials students can also use technologies of the mentoring and adaptive learning for the self-studying of the subject. These technologies give an opportunity to personalize the learning process.

Research on learning styles have a long history, but they are different and contradictory conclusions. Learning style can be defined as a kind of model of stable individual cognitive functions and features that defines the preferred way to motivate the individual. According to the concept Kolb individual style of activity is a system of the hallmarks of human activity, reflected in the style of education (particularly of motivation, cultural-cognitive profile of individual core competencies, etc.) (Kolb, 1999). Accordingly, taking into account the personal characteristics of the student (particularly cognitive and mental activity) and an understanding of his style of training will be a major component of the individualized approach. We believe that the individual educational trajectory can be designed as in high school, (elective courses), individual tuition, etc., And outside, using fully all the possibilities for access to global educational resources. Perhaps that take into account personal learning style of the student easier with electronic or mixed learning, when the same information can be presented in different forms. In fact, an individual approach can be carried out with the help of technologies of designing "smart" culturally-sensitive online media, and through the training of the cultural and qualified tutors. It can now be possible to create an environment that will allow the design of individual educational routes, individual educational trajectory, making the learning process non-linear variability, the most adaptive. Thus, each subject of education can design their personal competence profile, relying on the doctrine of the zone of proximal development, the concept of personal style training under the guidance of a mentor (tutor), or intelligent, which has a "cultural intelligence" environment (and recommendation service). That is, the individual can to build competence to model their competence profile.

2.1. The models of the personal learning styles

In the literature, there are many models of educational styles, and all offer different descriptions and classifications. Coffield highlights the 71 models of styles of education and considers 13 of them leading to the theoretical models of the importance and breadth of the field of their use and their impact on other models of image styles (Coffield, Moseley, etc., 2004). Despite the fact that in this area a lot of research, some important questions still remain open. First of all, there is no single term learning style. Honey and Mumford, for example, determine the learning style as "the description of the attitudes and behaviors that determines an individual's preferred learning style" (Honey, Mumford, 1992). Felder defines educational styles as "characteristic strengths and preferences of the ways in which students learn the process information" (Felder, Silverman, 1988). James Gardner defines learning style more closely, arguing that it is "an integrated method and the conditions in which students perceive and most effectively treated with store and reproduce what they are trying to learn" (Gardner, 1991).

Depending on the definitions and values of the educational aspects of the style of other authors call this educational strategy and cognitive style. Educational strategies can be regarded as some methods that students use in certain situations. These strategies may vary depending on the teacher, the subject and the situation.

Caufield pitched 5 models such large groups in this classification is based on the idea is to try to reflect the views of the main theorists in the field of learning styles. In the first group based on the idea that learning styles and preferences are largely base four modalities: visual, auditory, kinesthetic and tactile. The second group deals with the idea that learning styles reflect the underlying characteristics of the structure including the types of cognitive abilities of students. The third category of works with the learning styles as a single component of a relatively stable personality type. In the fourth group learning styles are considered to be relatively stable preferences in education. The latter category is by learning styles to educational approaches, strategies, orientation and training concepts.

2.2. The relationships between cultural values and the learning style preferences of students

Let us see what exactly is the difference in the learning styles of students from different cultural groups in terms of a certain number of researchers. L. Zhang investigated cultural differences in cognitive styles in teaching in international schools, watching the students from Northern Europe, North America (USA and Canada), Europe, South and South-East Asia (China, Taiwan) (Zhang, 2002). The author analyzed the processes of perception and processing of information, educational strategies (relying on the theory of Multiple Intelligences H. Gardner), the response to the information and ways of solving problems and introduced the concept of cognitive style of learning. The cognitive style of learning, according to the definition researcher, involves a process of analysis and knowledge representation. It is understood that the concept of cognitive style is quite closely intertwined with the concept of learning style, which is usually the result of "cognitive style".

The researcher argues that based on the theory of Multiple Intelligences H. Gardner, that the ability of adults of different cultures represent different combinations of different types of intelligence (Gardner, 1991). Although all normal individuals, in varying degrees, can be all kinds of intelligence, every individual has a unique combination of more and less developed intellectual abilities, which explains individual differences between people. The author notes that the effectiveness of a didactic model that is based on the theory of multiple intelligences, depends on the cultural and semiotic variation. We, in turn, can assume that the logical-mathematical intelligence will dominate as a component of the Western rationalist approach to information processing (individualistic types of crops); personal and existential intelligences will be the dominant context of information from representatives of cultures collectivist type, and so on.

The main criterion that contributes to cognitive style, according to some researchers is "field dependence" and "field independence" (Nisbett, 2003). Europeans and Americans are mostly field independent, the majority of Eastern culture are field dependent. During the training representatives of the Asian countries are more sensitive to the needs and reactions of colleagues, show good results, especially when they get positive reinforcement, praise from the teacher.

If we talk about the role of the modalities of perception (by Grinder) (Grinder, John, etc., 1983), the Zhang noted that students from the Nordic combined use learning styles (visual, kinesthetic), prefer verbal and mathematical approaches and classroom training. Students from North America like presentations, role plays, group discussions, which is very typical for the American and Canadian education systems as a whole. American students prefer visual approach with lots of interactive content in the learning process, discussions, allowing to express themselves and to express their own point of view. Students in Southern Europe are remarkable that are very fond of the training cases from real life. Asian students prefer theoretical system, a logical step by step approach. The dominant visual modality explained at the Asian students belonging to the ideographic language group. Spanish students prefer kinesthetic approach is highly structured material and prefer to cooperate in the solution of educational problems. For blacks characteristic kinesthetic learning style, with lots of practical component. They prefer to work together with the teachers, field dependence. Most blacks are mainly used analytical style, while as Hispanics prefer the synergistic style. They are representatives poliactive type of culture can be engaged at the same time a few things and miss, when a long time to do one thing. As for the study of learning styles of students in Asian (Japanese, Chinese, Vietnamese, Korean and Filippins), it may be noted that all the representatives of these cultural groups to motivate group training. 86 percent of Chinese students prefer to "organize" the formal (routine) learning style, as opposed to the flexible style of teaching in a game format. A. Sharma investigated the learning style of Indian students and identified the following patterns (Sharma, 2009). For members of individualist cultures are characterized by high power distance, pressure, social conformity, a high index of collectivism and others. Stipulate the specifics of learning style preferences. As for the specifics of the information, we can mention the fact that they feel more comfortable in the format of "recipient of knowledge" rather than "pioneers." As in China, in India, a teacher - a figure enjoying unquestioning respect. Indian students are quite adaptable, have strong visual preference to work with educational material, information is processed sequentially prefer logic and clear structure, like the facts. The training is dominated by an inductive style of work with the information. They like to work in a team and solving group problems. With regard to decision-making, it should be noted reflexive way of thinking, a tendency to

the analytical style (shown good results in the exact sciences), the lack of a bright pronounced propensity for innovation and creativity. Indian students mainly pragmatic: take decisions on the basis of objectivity, utility, functionality.

2.3. The problems of using personal learning styles in ITS (intelligent tutoring systems)

Adaptive educational systems just deal with this problem, the use of individual learning styles. Their goal is to provide the students such courses that meet their individual needs and characteristics as well as their learning styles. Despite the fact that adaptability is a great advantage of these systems, they have serious limitations. For example, adaptive systems lack of integration as they support only some features web-formation, and the course content is not suitable for reuse. Consequently, the use of these systems is rare. On the other hand (insert name LMS) are still widely and successfully used. They aim to support teachers and to make the on-line teaching as easy as possible. However, despite the fact that educational and psychological theories support the idea of adapting to individual differences pupils LMS provides adaptability or small, or in most cases, do not provide for their adaptability. The most productive theoretical framework that implement and develop adaptive educational apps is "reasonable" (programmable) training systems, adaptive educational hypermedia environments and adaptive educational systems, available through the web-version. This framework (basic structure) actually represent a paradigm (intelligent educational system), which is based on the general concept of data that include domain knowledge expert model, student model, teaching model and communication model. There are three areas associated with the paradigm of adaptive educational web-systems. The first - is the improvement of the educational model, especially learning style. The second is to improve the educational model of adaptive models, modes, and control. The third area focuses on developing a new type of interaction between the learner model, the pedagogical model and content. The most significant contribution of this paradigm is possible in the development of techniques adaptations occurring in the process. Systems developed in the framework of this paradigm of intelligent educational system have led to significant progress with respect to their use and promotion of more modern instructional techniques adapting the learning process

to a variety of learning styles, although there are some important questions that still remain unexplored. The problems associated with the definition of adaptation and conceptualization learning style can be identified in the development of adaptive software within this paradigm. In some cases, no distinction is made between knowledge that is a type of cognitive level approach the design and style of learning, which can be defined as the preferred type of cognitive structure. Some authors do not distinguish between learning styles and instructional strategies. And besides, most of the systems used such tools measure which is characterized by low and unreliable indicators of validity. Existing projects are now adaptive educational hypermedia environments tend to combine instructional strategy model of learning. In most cases, instructional approach does not reflect the current trends of modern instructional theory and practice.

As for the learning style preferences of people, not their level of knowledge, skills and cognitive abilities. People with different abilities can be found in a variety of learning styles. Furthermore, even when placed in the non-preferred terms of perception and processing of teaching material people on the same level are able to do what is required of them, as they include cognitive mechanism necessary adjustments perception.

Creating a prototype of adaptive software – is the best way to work with theoretical constructs such as learning style, adaptive learning scenario, model and control. Learning style is a cognitive structure type preference. Concurring behavior (practical behavior) students as a cognitive phenomenon has given a good explanation of the relatively small differences in people with different learning styles (Taratuhina, Sarapulova, etc., 2016).

2.4. Certain aspects of copyright protection of open educational resources

One of the most popular types of network communities today is knowledge exchange communities (practice communities) that represent social communities, members of which are involved in collaboration and the crucial condition here is their communication. The main components of knowledge exchange communities are the following:

– Knowledge area. As a rule, knowledge area is the ground for interaction that influences originality of the community and formation

of its specific features that make community members participate in collaboration and contribute intellectually in community development.

– Group of people interested in this knowledge.

– Collaboration of participants and their common theoretic and practice tasks.

According to S. Bondarenko (Bondarenko, 2003) there is a new principle in network communities in the view of pedagogic communication. According to the traditional model of educational communication there were used the models "one-tomany" in a team and "one-to-one" individually. In educational network communities the "all-to-all" principle is used. This communication model has a high value because participation in such communities forms tolerance, group and critical approach to task solution, adoption of decentralized models not to mention formal and informal communication on professional topics, innovative approaches and exchange of educational experience. The author believes that educational network communities are structured groups of computer network users that communicate for educational purposes, have stable social roles and behave in the virtual reality in a certain way. As a rule, there are several types of educational work in such communities: network publications, competitions, consultations, comments on materials, distance education, creative laboratories, projects etc. S. Bondarenko (Bondarenko, 2003) suggests classifying educational network communities according to the following: ***number ofparticipants, types of collaboration, focus on certain groups of learners.*** According to the number of participants the global social community Internet can be presented as consisting of macrosocial and microsocial network communities (Taratukhina, Maltseva, 2008).

According to the types of collaboration the author suggests the following classification of network communities:

1. Virtual network communities of teachers (tasks: planning, methodological cooperation etc.).
2. Virtual network communities of teachers and experts (tasks: two-way channel between teachers and experts on a certain subject that helps teachers train and get news and methodological help and experts know the real state of affairs in their professional interests).
3. Virtual network communities of learners and teachers (tasks: community members should carry out a proposed project; in this case the teacher is a participant, not the leader).

4. Virtual network communities of learners (tasks: discussion, carrying out projects, common problems solution, mutual assistance).
5. Virtual network communities of learners, teachers and experts, a cluster of virtual network communities (tasks: learners get to know problems of the real world, so there will be an opportunity to fill the gap between acquiring new skills and using it in practice).

According to the focus on certain groups of learners the author suggests the following types of communities:
1. Preschool educational virtual network communities.
2. School educational virtual network communities.
3. Secondary and higher education virtual network communities.
4. Further training virtual network communities.

Efficiency criteria of educational network communities include the number of active participants; community life cycle; dynamics of its development that includes increasing number of active participants, amount and quality of discussed topics; information, methodological, consultation, expert, educational, project activities; certain rules of behavior and designing in community; structured knowledge base of community; information-communication activity of community (internet seminars, conferences, network meetings, informing of internal and external events of community, interaction with similar communities).

Some of Russian educational network communities are «Set tvorcheskikh uchiteley» (Network of creative teachers) http://www.it-n.ru/); «Sotsobraz» (Social image) (http://wiki.iot.ru/index.php/); Sodruzhestvo metodicheskikh obedineny (Methodological communities) (http://center.fio.ru/som/); Vserossiysky @vgustovsky Internet-Pedsovet (All-Russian @ugust Internet staff meeting) (http://pedsovet.alledu.ru); «Internet – gosudarstvouchiteley» (the Internet is the state of teachers) (www.intergu.ru). Among foreign educational network communities there is European School Network (www.eun.org). Its purpose is the adoption of information and communication technologies in the European educational system. Some of significant parts of European School Network are Virtual School (http://www.eun.org/vs) and Collaboration Area (www.eun.org/ projects/). Collaboration Area is intended for schools and teachers that participate in international projects and want to find correspondence partners. American program I*EARN (http://www.iearn.org) offers learners to better understand our life, participate in joint research, scientific and creative projects, develop skills and desire for learning. Canada SchoolNet (www.schoolnet.ca) is an

educational website that contains more than 7000 educational resources that are interesting for learners, teachers and parents. In Great Britain there is a school community server Windows on the World (www.wotw.org.uk). Learners from 5 to 19 years old are looking for partners all over the world to carry out educational projects together. The server is supported by the Education Department of the British Council.

Considering this way of information representation we can say that any educational network community is a regularly updated electronic edition for education, information and entertainment purposes that is available by using tools of the Internet. Educational network community is presented by World Wide Web as a website containing text and multimedia materials and articles on applicable topics of community. Access to these articles and transition through hypertext are available by internal and external links. In contrast to offline versions these network communities contain interactive elements such as tests, animations, games, online polls, distribution, blogs and search system.

As a rule, any educational network community as a web-resource has an Internet address that helps it to be found among other communities.

The structure of a network community is obviously integration of content, structure and design aspects into a multilevel structure that allows users to easily use resources of this web-resource. This is actually combination of website interface, text and graphic materials and multimedia (sound, video) objects.

Considering the electronic form of presenting information of network communities, questions of graphic design of interface as well as content of web-resource become actual questions. Practice principles of e-edition layout design should be held with the help of approaches developed in the field of linguistics and semiotics that reveal combination laws of text content, images, semantics of fonts and text marking (italics, spacing, indent etc.).

When text semantic system is broken, the recipient becomes "semiotic (information) noise" quite often and interprets the content incorrectly. From the hermeneutic viewpoint it can be defined as partial loss of information truth.

Graphic presentation of the content should obviously be graphically expressive to stimulate complete transfer of pragmatic potential of

verbal means when e-text is quickly read. One of the text readability features is ergonomic design of the text.

Our study is based on the protection theory of A. Reformatsky that sets a theoretical guideline of understanding semiotic possibilities of graphics in its correlation with the text and its content (Bondarenko, 2003) and is a necessary application incomputer design of hypertext, and specifically, different web-resources.

But the most interesting thing is the role of cognitive mechanisms and understanding of it during the graphic design of electronic text. The fact of the matter is that graphic expressiveness of text is based on laws of perception of graphic symbols. Psychological perception of the reading process should be analyzed to understand the laws of expressive means available to designers (editors) to transfer the whole meaning of text being created.

We understand the meaning of text when perceiving it or rather when seeing it.

External facts that are the base of visual perception consist of visible spots of different size, form and pattern and blanks that alternate with these spots.

The type, order and proportion between spots and blanks are not random, but logical. They are the context, a special system that closes a sequence of symbols, all the elements of which are interdependent.

There is a strict correspondence between visual irritation and awareness of it. The consciousness exactly catches the difference between capital and small, upright and inclined, thin and bold letters and recognizes the same cases in the text.

Certain graphic symbols, its order and interconnection are associated with a certain content and meaning. It follows from this that the base of the reading process is symbol recognition and its structural storage, translation from the language of visualization to the language of sense.

It's necessary to mention that ergonomic requirements are essential for two main components of the design of any educational network community: interface as a means of human-computer interaction and text organization itself as the linguistic component. Within the bounds of this criterion there are four main elements that provide such human-computer interaction.

These are three menu types: local, global, service and navigation.

The purpose of designing ergonomic interface is to represent information using said elements as effective as it is possible for human perception and structure representation on the display to attract attention to the most important information items. The main purpose is to minimize general information on the display and represent the information required for user.

All the requirements to ergonomically design the interface of any network edition can be divided into three main groups:

- Navigation.
- Page structure.
- Colour solution.

Any person sitting in front of the computer starts the work with information receiving. In his consciousness the

properties of objects being perceived from the display are reflected and his sensory image is formed. Physiological base of sensory image formation is the functioning of visual analyzer.

Some conditions that define normal functioning of visual analyzer bring us to main criteria that are presented in the work of A. Reformatsky (Reformatsky, 1933):

- Font.
- Nonfont.
- Graphic.

Text structure representation, hierarchy establishment, semantic proportion marking, representation of architectonicproportions system are realized by font and nonfont text features that are the most important text components.

But there is a problem in systemization of graphic norms because principles of graphic expressiveness of the text are based on font and nonfont features.

The protection theory of Reformatsky [Ibidem] solves this problem and marks text segments by changing graphic features to highlight its semantics.

In cases when semantic proportion is not perceived, its protection is not enough. It's necessary to add graphicfeatures that are extra-protection of semantic proportion for reader's perception.

Basic principles of the graphic protection theory of Reformatsky are the following:

1. Every marked element of the text should be protected enough by graphic features for reader's perception.
2. To choose the most practical protection means it is necessary to represent all the elements marked by the same features and add graphic features to those elements that need extra-protection. Note: it is necessary to change one graphic feature only to strengthen or weaken this type of symbols. When two, three etc. features are changed the protection can be redundant.
3. The accepted system of graphic features for certain symbol types should be kept over the whole text document to prevent symbol synonymy.
4. The context (quantity and proportion of text elements) is the main criterion for selecting the most practical option from some equivalent.

It is practical to mark an electronic text only after analyzing possible equivalent systems for marking different text segments and titles.

Almost every expert in website development has now his own design rules and these rules are not always the same. So the main task of ergonomic design of text and interface for educational network communities is the analysis of such criteria for developing a specific model, general text design aspects that are the most effective for perception of text information by users.

Now more and more educational technologies are welcomed in our everyday life. One of them is distant learning, which includes most common for students and learners open educational resources. There are many successful examples in USA (MIT OCW, Connexions), France (ParisTechOCW), China (CORE), Taiwan (OOPS), Turkey (METU), Spain (UNIVERSIA), UK (OpenLearn) and others.

Distant learning has many advantages. It widens and provides easy access to education, it makes it affordable for everyone, breaks geographical limits, saves time and money for world-wide companies on their corporate courses. Open educational resources (OER) improve quality of materials and which is now really topical – allow students to build their individual learning path (trajectory).

However, it's impossible to deny multicultural specifics of education. Looking closer there can be found difference in networking among group members, hierarchy and size of communities, types of tasks, interfaces, access characteristics and etc.

Cultural differences influence intellectual preferences and build personal learning style (frame), unique in every cultural group.

While studying cultural specifics we found that they hinder internet resources a lot from being comfortable in perception, use and understanding in multicultural communities. So we have distinguished 3 main components, which have to be taken into account while designing open educational environment on the Web.

They are:

1. Ergonomic design of OER;
2. Academic (pedagogic) specifics;
3. Content preferences and specifics.

Meanwhile, content preferences initiated by cultural differences make the problem of using OER even deeper.

While OER provide free official use and reuse of materials, we have to respect the rights of copyright user. As for western countries (cultures) the intellectual right and copyright questions are critical, they have already taken certain steps to form open-licensing framework. All their papers have to include references to all the resources and thoughts involved. These resources should be recognized as reliable for being an official source. And when the author and copyright are absent, the resource cannot be considered as official source of information.

The opposite situation is common for eastern countries, including Russia and CIS. The problem of copyright is the last one to be taken into account. Nevertheless, official promotion, support and recognition of OER is not possible without established copyright policy. And now it's a huge deal to correctly adopt the mechanisms like Creative Commons licensing for Russia and CIS counties, to make them work correctly, ensure their relevance at all levels.

As a result, it's clear that cultural differences influence almost every detail in educational environment. They form certain patterns in behavior which in their turn influence even the legal components of OER.

Cultural adaptation of OER is one of basic principles mentioned in 2012 PARIS OER DECLARATION. The only problem is to make it work.

CHAPTER 3. METHODS AND TECHNIQUES OF A STUDENT INTERACTIVE DIDACTIC SUPPORT: THE POSSIBILITIES FOR ESTABLISHING A CULTURE-SPECIFIC EDUCATION PATH

3.1. The prerequisites for development in the area of cross-cultural multimedia didactics

This approach is based on research studies of differences between mentalities, ways of working with educational information, culturally-specific teaching methods and teaching techniques that determine differentiated approaches to the choice of multimedia technologies in education system. Currently, a significant part of educational process transforms to online format. Modern learning process becomes autodidactic in many ways. The purpose of modern education is to create conditions in which educational path could be formed and adjusted with the help of trainee. It seems to us appropriate to establish the criteria for determining cultural-cognitive profile of a person, in order to make possible further technical and methodical adaptation of educational content and interface. Control of knowledge and qualification boundary will be realized by “competence-based profile of students”. It is also possible to create advisory service facilitating “buildup” of professional competence according to cultural-cognitive profile of individual. To improve "cultural intelligence" of tutors we suggest to use online cultural assimilator.

The chapter dwells on theoretical grounds for mapping an individual study pathway in electronic educational environment. Here, individual study pathway is viewed as a purposeful plan of a person’s competence profile. Also, the article points out parameters for designing a model of individual study pathway.

3.2. Methods and Techniques of Student’s Interactive Didactic Support in On-Line Education Process. Possibilities for Establishing a Culture-Specific Education Path

We find it of great interest to consider the existing methods of adapting educational content and interface to the personal and cultural traits of a student by means of semantic technologies. There are a number of researches into this sphere Gonçalves, V. (Consalves, 2007).

Among the results of these studies, we can point out a culture-identifying system CAWAS, which allows adapting multimedia on-line education content to a student's culture through intellectual agents. This system is supposed to possess "cultural intellect", i.e. be capable of providing various interfaces and methods of representing the educational materials depending on the cultural specifics of a student. The system is supposed to interpret a student's behaviour and, after identifying their culture group, to "suggest" them a suitable educational program and interface. This is the task of an agent responsible for interpretation, which receives information from the data base on the types of thinking processes and activities of different cultures. Therefore, the culture data base contains two types of information: static cultural data and dynamic cultural data. Then the information is passed to the agent responsible for selecting an education program. Also, the interpretation agent requires from the culture selecting agent about a student's culture type and then passes this information to the agent modeling the culture type. The latter agent generates new culture clusters which are stored in the "dynamic culture" module. Next, the educational program selecting agent sends the data (emotive and motivational parameters with relation to cultural identity) to agents responsible for culture modeling and culture adaptation for planning the educational path, selecting the educational content, schedule, methods etc. The adaptation agent takes the final decision on supporting or rejecting this course. The agent constantly updates its data base which allows better adaptation to students' culture types. The agent creates a student's "cultural profile", regularly updating it, and thus enhancing the general data base. This whole process allows adapting multimedia content to the culture specifics of a certain student. Thus, the cultural and cognitive personal traits, identified when a student enters the program, will determine the specifics of educational activities, information processing, as well as methodology, feedback and assignments. We believe that the problems arising in distance education can be overcome by employing cross-cultural awareness of the participants of the educational process and, consequently, by synchronizing their activities. In fact, taking into account student's cultural and cognitive traits and the nature of their educational activities will allow meeting a student's expectations and will contribute significantly to the efficiency of the educational process.

3.3. Features of Framing Information in Different Cultures, Teaching Methods and Teaching Techniques

As information processing occurs, students form own semiotic frames. Moreover, we can assume that in one or more cultures, frames may be different. In didactics frame is defined as a recurrent way of educational material organization (frame as a concept) and teaching time (frame as a scenario) when dealing with educational information. In this connection, the frame-based approach reflects the national features of the approach to the study, the organization of knowledge and the problem-solving methods. In various cultures this approach is not unified, same applies to virtual education domain.

In her research, B.L. Leaver described some aspects of the relationship between cultural environment, didactic and cognitive features. The author differentiated Western approach from non-Western approach to study. The Western approach is characterized by such features as the dominant verbal auditory and visual style, deductive, analytical way of thinking, impetuosity (information processing is fast paced and is often accompanied by frequent change of activity and team work); assessment is conducted in the form of tests, there's a focus on differences, on contrast and individualized approach. On the other hand, the Eastern approach is characterized by dominance in auditory and kinesthetic styles, dependence on the context, tendency for searching similar features, for viewing situation as a whole and using intuitive perception. Also, figurative and narrative way of expressing thoughts, as well as continuous focus on a single thought are typical for the eastern approach.

Knowledge of culture specific features will undoubtedly help improve education process. However, it's necessary to mention the scale of growth of the integration processes that one way or another will be shown as a part of transformation of cognitive features, i.e. in polycultural education tradition learning frames will develop and acquire new semantic overtones.

Choice of effective teaching methods will be determined by culture specific cognitive and educational activity. When dealing with polycultural audience the following aspects are worth considering: content selection (culture codes, semiotic context); culture specific way or structuring learning activities (models acceptable in a culture); system of assessment (providing incentives for an individual as well as for a group).

Receptive and reproductive teaching methods based on paternalistic view of the world will dominate in collectivist cultures, whereas individualistic cultures predominantly use heuristic and problem-solving methods.

Thus, the practice of linear and non-linear education methods presents particular interest. The linear methods are predominantly used in Eastern cultures, and nonlinear methods are typical for Western cultures. It should be noted that in the e-learning educational environment these features remain. In our opinion, dominant culture frames determine the choice of methods. Speaking of the linear method, it is necessary to admit that it is a linear sequenced data of presentation and a strong hierarchy. But the nonlinear approach is often unpredictable with hypermedia and interactive presentation of content. Also, as mentioned above, the different educational cultures are dominated by different paradigms of information processing. For example, Western cultures have extensively been using interactive education that helped increase cognitive flexibility. In most Eastern cultures education methods are aimed at revisiting the existing context. Thus, we can see that Eastern cultures predominantly use structured or formal learning, whereas Western cultures prefer flexible, adaptive ways of working with educational information. It is also necessary to take into account both the specifics of the information processing and technological aspect of education process (attitude towards innovative educational methods in a given culture).

3.4. Cross-cultural Multimedia Didactics is a New Direction of Online Pedagogy

Educational process set within multicultural e-learning environment, methods and forms of its organization will be the subject of cross-cultural multimedia didactics. Ethnometric approach by G. Hofstede has been applied to the description of subject at hand. In this context the following important parameters have been selected:

A. Consideration of psychological and pedagogical features of the educational process in a cross-cultural context

This section deals with a variety of problems which are stemming from objectives and values of national educational systems, educational

paradigms, national specific forms of educational communication, types of educational discourses, etc.

For example, if a student belongs to a culture with a low power distance rating than that of a teacher, he would expect from a teacher a more informal way of communication involving exchange of opinions, discussion of mistakes made, which may appear somewhat alien to the teacher. Consequently, the exchange of the relevant information and instructions between a teacher and a student would not take place, which actually will have a negative affect on the future process of study. Representatives of the cultures with a high level of uncertainty avoidance frequently try to avoid ambiguous situations. Ambiguity and change are frowned upon. Structured and routine, even bureaucratic approach to problem solving is preferred. Interactive education in cultures with a high power distance rating requires monitoring of the learning process. On the contrary, in cultures with a low power distance rating interactive education often thrives. Indeed, members of the team from a culture with high index of individualism are inspired by competition, ability to express own opinions and make own decisions. On the contrary, members of collectivist cultures require quiet environment and quality hardware for group interaction. Experiments conducted revealed that in Western cultures it is acceptable to discuss the mistakes in order to avoid them in future and learn from them, ask questions, argue the points of view, etc. On the contrary, in Eastern cultures the ability to discuss mistakes is limited due to high importance of maintaining harmonious relationship within the group and fear of failure.

B. Culturally conditioned features of ergonomic design of electronic manuals and media; National features of educational content organization

Cleary, in this context, the importance of psychological and didactic basis for the organization of cognitive activity in a multicultural learning environment cannot be underestimated, neither can be academic support. Thus, cognitive and contextual components may really influence the specific forms and genres of electronic books (i.e. different visual perception of the function keys, difference in ways information is sorted, in presentation of data formats and iconic characters), as well as their structure, content and interface. Electronic learning systems featuring interactive learning, variety, creativity (training scenarios, train-

ing simulation environment, integrated learning environments) may successfully be used in Western cultures, and, more likely, with less enthusiasm in the East.

In order to create an effective educational resource aimed at multicultural audiences, it is necessary to consider such components as: a navigation system, cultural competence, easy access to logically presented information, appropriate design, the degree of user involvement, the use (specifics) of various multimedia materials, strategies of educational process, user and motivational support. 'Cultural marker' is a design feature that belongs to a particular culture, i.e. colour, national symbol, space layout etc. Members of different cultures pay attention to different things. For example, for cultures with a high power distance such parameters as index resource structure, hierarchy, information security, officiality in e-learning environment are of high importance. It has been noted that users from different cultural backgrounds behave differently when using educational resources organized by the method of open content: members of cultures with a high index of individualism prefer unique content, and they are more active in using the resources of this kind, they often refill the existing content or change it. Per contra, the representatives of cultures with a high index of collectivism often relay existing content rather than create a new one.

Thus, we observe influence of national educational paradigm on structure of intellect and specific preferences in processing of educational material. Once these factors are taken into consideration, the choice of effective methods of learning within multicultural educational environment is a simple task indeed.

C. Interconnection of cognitive characteristics, choice of optimal teaching methods and the preferable types of multimedia technology

Additionally, one of the primary issues in cross-cultural educational environment is a problem of quality and appropriateness of the feedback (timely responses, degree of clarity of the goals and objectives set by tutors), which for the most part depends on the cultural context.

For the most rapid adaptation of tutors it would be appropriate to develop a cultural assimilator, aimed at adapting to the multicultural education in a virtual environment. This assimilator should be developed in the following segments:

1. Situations aimed at forming psycho-pedagogical and didactic competence in cross-cultural context;
2. Expertise in culture specific ergonomic design of electronic textbooks and media;
3. Thorough knowledge of culture specific educational content and types of pedagogical discourse.

In our opinion, there is a certain pattern of interconnection between the type of culture, educational objectives of a culture, specific techniques and teaching methods, motivational and pragmatic characteristics and preferable type of multimedia technologies for the members of this cultural group and, finally, effective ergonomic parameters(Table 3.1). We'll compare countries belonging to different cultural groups. The design of on-line resources certainly embodies national culture of its creators. User web interface must meet the cultural and pragmatic expectations of the user (especially in navigation, graphics and content) for maximum efficiency of presenting information. For example, it is possible to observe that the design of European sites is characterized by ease of navigation, logic and predictability, dosage of information and no hidden content.

The USA Mono active type of culture, dominance of individualism,low power distance rating, low uncertainty avoidance, low context culture	**Educational paradigm:** Variation, a focus on personal development, innovation and creativity. **The aims of education:** building a complete picture of the world, providing solutions to problems in wide array of uncertain situations, personal development. The use of problem-solving methods. Creative problem solving, tendency to set super-objectives objectives, innovation.
	Preferred multimedia technology: symbolic objects, graphic objects, video objects (animation, dynamic models of phenomena and processes, videos); "virtual reality" environment (simulators, designers, trainers, interactive models, virtual laboratories, electronic engineers, electronic educational games).

	Ergonomic features of educational materials: small blocks of information, comfortable navigation, option of online interaction with the tutor and ability to edit content at own discretion; availability of numerous different educational applications, links to groups in social networks and a large amount of video content, along with content in text format.
CHINA Culture with a high index of collectivism, high power distance rating, high reactive culture of power and high degree of uncertainty avoidance, high context culture	**Educational paradigm** - maximum conformity to rules and norms (Confucian education model). **The aims of education**: safety, conformity, adaptation to typical situations, the world as a set of patterns. Linear methods, reproductive, strict adherence to the instructions and training guidelines.
	Preferred type of media technology: shaped objects, video objects (animation, dynamic models of phenomena), "virtual reality" environment, electronic expert coaching systems, electronic educational games, electronic books, electronic lectures, electronic collections
	Ergonomic features of educational materials: vertical and horizontal menu, very bright colors, overload from links and information blocks. The interface is designed in such a way that access to information is often very difficult; one may notice high level hierarchy in the way information is organized and presence of special social roles to control access to it. Lots of slide shows and hieroglyphics.
GERMANY Mono active type of culture, rational way	**Educational paradigm** – in the middle between unitary and variable paradigms. **The aims of education:** - balance between conformity and formation of a system view

of thinking, average index of individualism, high uncertainty avoidance and high power distance, low-context culture	of the world that is able to provide solutions to problems in a wide range of uncertain situations, personal self-development
	Preferred type of media technology: symbolic objects (signs, symbols, text, graphics, charts, tables, formulas etc), graphic objects (photos, drawings, paintings), electronic expert systems, electronic study books, electronic books.
	Ergonomic features of educational materials: horizontal menu consisting of information blocks, rather succinct, easy navigation, logical order and predictability, controlled information, absence of hidden content

Table. 3.1. Interconnection between cognitive characteristics, choice of optimal teaching methods and preferable types of multimedia technology

3.5. Usage of cultural assimilator for tutor "cultural intelligence" improvement

Cultural assimilator for tutors represents situation modelling, in which interaction of two individuals with different cultural backgrounds is attended by four behavior interpretation. The description of situations aims to identify the differences between cultures, in our case, educational cultures. During the situation selection special aspects of student and tutor behavior, known in cross-cultural multimedia didactics, will be considered.

We propose the following structure of assimilator:

1. Ergonomic part. The creation of effective educational resource, focused on multicultural audience, involves such components as: the resource navigation, the accessibility of information and its structure, appropriate ergonomic design, the degree of user involvement, the use (specificity) of various multimedia materials, user and motivational support.
2. Content specification unit. Representatives of different cultural groups have different content preferences in structure

and quality. For example, representatives of cultures with a high index of individualism prefer unique content, so they often add new information and edit the content. Representatives of cultures with a high index of collectivism will rather relay the existing content instead of creating a new one.

3. Discursive part. It's important to know main national discursive models; communication failures could be caused by various discursive strategies of a culture, discrepancy between practical purposes of the author and information recipient, the difference in the volume and substance of their lexicon, mismatch of conceptual elements in the linguistic picture of the world.
4. Methodical unit. According to cultural-cognitive specificity educational information is often presented ambiguously – for example, there are linear and nonlinear learning methods, heuristic and reproductive forms, based on cultural and cognitive specifics.
5. Communicative unit. G. Hofstede's dimensions have great impact on communication. For example, if student is a representative of culture with a lower value of power distance index than tutor, he would expect from tutor informal relationship, including an exchange of views and mistakes discussion, to which the teacher won't be ready. The inhabitants of the countries with a high index of uncertainty avoidance do not accept ambiguous situations and tend to avoid them if it's possible. Ambiguity and inconstancy are treated as undesirable phenomena. Representatives of these cultures tend to give the preference over structured, routine and even bureaucratic way of task performance. Using of interactive educational forms in cultures with high power distance should be controlled over the process. On the contrary, cultures with low power distance succeeded in such learning format practice. In the course of teamwork and joint cases solution representatives of cultures with a high index of individualism need competition spirit, an ability to express their opinions and an opportunity to make independent decisions. By contrast representatives of collectivist cultures require quiet atmosphere and qualitative technical means for group interaction.

It's quite difficult to develop an effective cultural assimilator. We will describe the basic steps required to develop cultural assimilator.

– **The Selection of the Situations**

It is desirable to select materials in such a way that the most significant and peculiar divisions between tutors and students as representatives of different cultures will be described in culture assimilator. In the selection of situations the following characteristics should be considered: stereotypes of both cultures, cognitive features, discursive features, specific of work with information, special aspects of communication with the tutor and with each other, etc. It is important to organize the process so that the situations will be supplemented not only by the experts and tutors, but learners.

– **The Creation of the Incidents**

Incidents are constructed as follows: when the necessary information has been taken from selected conflict situations, it is examined and adjusted by a number of experts and then specific incidents being formulated.

– **The Determination of Attributions**

The determination of attributions represents collection of questions about person behavior in particular situation, emotional and cognitive reactions, etc.

– **The Selection of Attributions**

At this stage, it is necessary to pick up a few alternative explanations - attributions. Interpretation of human behavior proceeds as follows: experts suggest three possible responses, that, although believable to culture outsider, do not adequately explain the incident. And one response with culturally accurate explanation for the incident.

– **Complete Set of "Cultural Assimilator"**

Each situation is usually prescribed on several pages. There is one page for description and one for the question with four answer choices. We decided to use Wiki PLatform for placement of developed cultural assimilator (Taratuhina, 2014).

3.6. Design of the Web Service

In our opinion, the main design criterion for the web service is that it must be in line with the aim of receiving necessary knowledge, skills and competencies for future employment.

The service is supposed to focus on a sphere in the labor market or on a concrete profession within this sphere. Communication with the user is carried out as follows:

In the initial stage the service offers the user the most relevant professional areas and professions depending on the education program.

Afterwards takes place the search of the most relevant education courses from available elective courses. It is important to notice that, once decided upon, the choice of the user remains for the entire period of training and can be changed only in the next academic year and only if choosing a new IUP. In this process it is necessary to solve the following problems:

– to define the match between the education program and professional sphere (profession);

– to define the match between education courses and professional sphere (professions) chosen by the user.

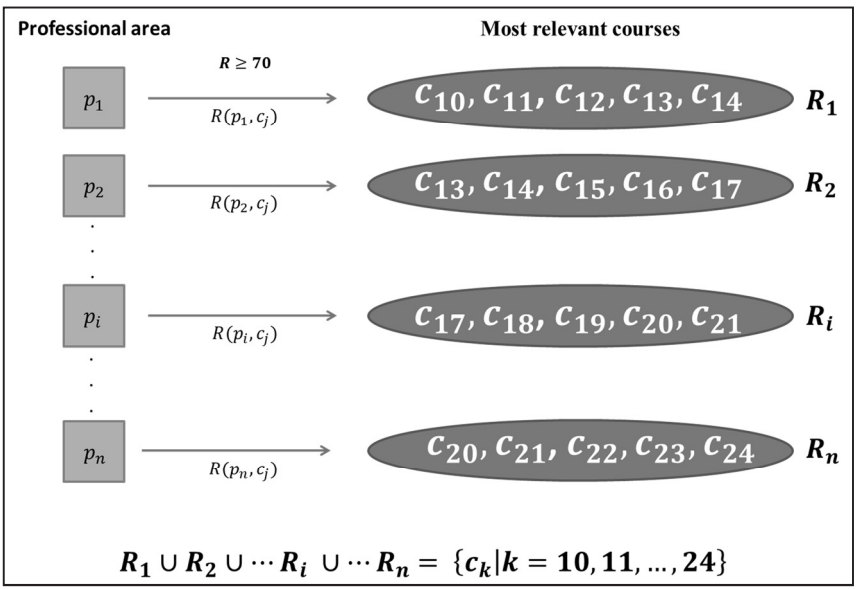

Figure 3.1. Definition of most relevant courses for many professional areas

Based on this information, it will be easy to define the "matching" between two objects, thereby defining and allocating the most relevant matches. In other words, between each registered professional sphere

and each of the education courses there must be established a certain relation of relevance $R(p, c)$, where p is the name of professional sphere, c is the name of a course, a R is the relation which is an ascribed positive number. The latter indicates the degree of complementarity of a course for concrete professional sphere. Courses with the highest indicators are offered to students in order to create the most effective PSP. To prevent redundant education courses, their names are taken from a set of U_{c_j}, where c_j is the name of a education course which holds the relation $R(p_i, c_j)$, at the fixed p_i, has one of the greatest admissible values (Fig. 3.1).

We offer two methods for the solution of the above tasks.

First method

The following principle is the cornerstone of the first method: for each professional sphere and profession to define and allocate the list of the necessary competences. Competencies can be defined as basic qualities of people that determine the behavior or the way of thinking in various situations lasting a considerable period of time.

Naturally, if the profession is included in a professional sphere, the required competencies for the profession can be derived from the professional sphere. Additionally, the professional sphere defines competencies for a given profession and distinguishes between other professions from different spheres. Following the same logic, one can define and match competencies for all considered education courses. Based on the identified competencies one can present all education courses available in the form of a semantic network. The semantic network is a network graphic for orientation. The knots of the network graphic show the concepts and objects, the connecting lines correspond to the "matching" and the relations between the objects.

Once defined, such semantic networks and competencies for each profession will make it easy to program a service for finding relevant objects (the higher the match of competences, the higher the relevance (Fig. 3.2)). Additionally, the service will store information about competencies which the student acquired during his educational path.

The advantage of this method is the information which we receive as a result, as well as the speed of finding relevant courses. The semantic network include not only optional education courses but all courses

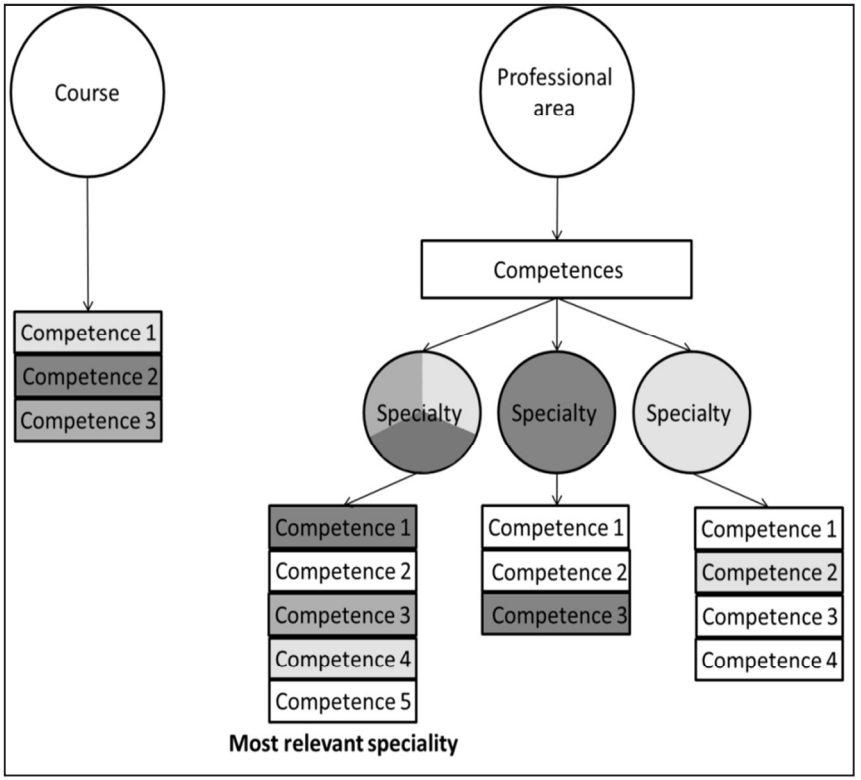

Figure 3.2. Definition of relevance between courses and specialties, 1st method

their studies. As we have defined the competencies for each profession, we can now easily say what professions fit the student according to their competencies or what competencies the student must acquire to fulfill the requirements for a given profession.

Thus, as a result, we obtain a model of a competence-based profiling which will be very helpful for the *student when looking for* employment, as well as for *companies when* hiring graduates. In other words, the service defines the competence-based model of the student and offers the most suitable education courses.

The drawback of this method is the complexity of mapping the semantic network described above, in particular if the there is a large number of education courses.

Second method

The second method suggests that each profession is characterized by a precise professional standard in which all functions of each profession are accurately specified. The professional standard is a normative document applied to numerous areas, including: the selection and placement of personnel, the planning and standardizing of work activities, the development of employee management systems, the advisory for finding solutions of profession specific tasks, the establishment of a voluntary certification and assessment system of employees' competence level, the development of educational standards and programs according to the requirements of employers, the vocational training, retraining and professional development of the employees.

Each labor function in its turn defines knowledge and ability functions, which are necessary for the correct implementation. In order to define the relevance of a course to a given profession, it is necessary not only to indicate knowledge and abilities for each course, but also to determine their relevance by the relevance parameter (Fig. 3.3).

The advantage of this method is that it is easier to carry out than the first method, since there is no need to define the required knowledge and skills for each profession. However, the second method excludes possibility of obtaining additional information at the end of education about the student's acquired competencies. And, in the case of a large number of courses, this method will be slower in defining relevant courses than the first method. Both methods are supposed to create a recommendatory service which will serve as a navigator for designing the PSP and modeling an actual competence-based profile for a student. The described web service will help to solve the problem of designing an individual PSP for each student of a higher educational institution. This will help create effective PSPs in the electronic educational environment, taking into account the «designing» of a student's competence profile. Certainly, this service will not solve all problems which we face in the educational process. However, the proposed web service will definitely promote a more conscious approach to education on behalf of the students, modeling the student's future and the strategy for the student's future life in the context of continuous education (lifelong learning). Undoubtedly, the problem of mapping students' individual study pathway is currently one of the topical issues in modern education, and, in order to choose the most effective models of de-

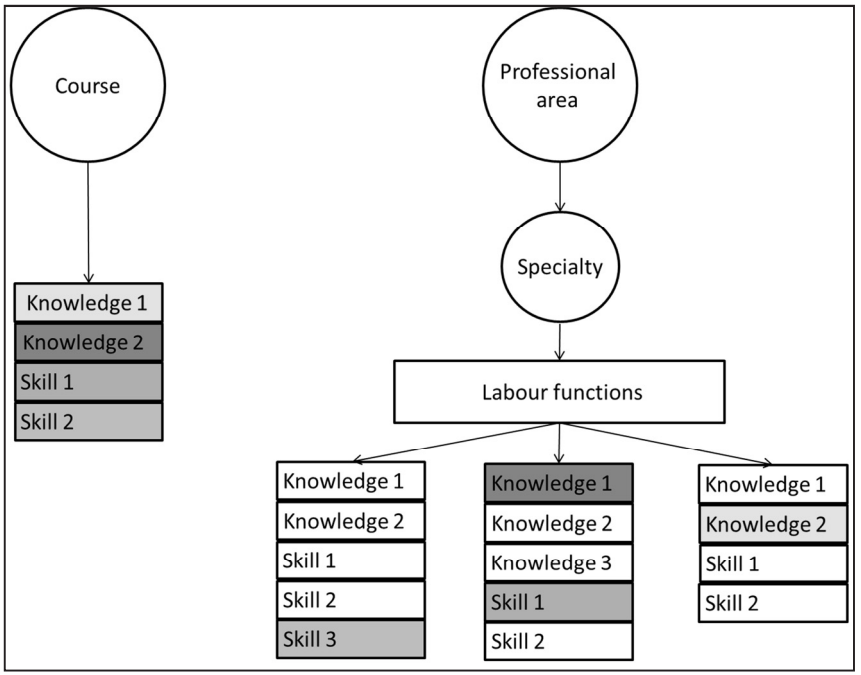

Figure 3.3. Definition of relevancy between courses and specialties, 2nd method

signing ISP, a thorough research into the global experience in this sphere is essential.

The advantage of this method is that it is easier to carry out than the first method, since there is no need to define the required knowledge and skills for each profession. However, the second method excludes possibility of obtaining additional information at the end of education about the student's acquired competencies. And, in the case of a large number of courses, this method will be slower in defining relevant courses than the first method. Both methods are supposed to create a recommendatory service which will serve as a navigator for designing the PSP and modeling an actual competence-based profile for a student. The described web service will help to solve the problem of designing an individual PSP for each student of a higher educational institution. This will help create effective PSPs in the electronic educational environment, taking into account the «designing» of a student's

competence profile. Certainly, this service will not solve all problems which we face in the educational process. However, the proposed web service will definitely promote a more conscious approach to education on behalf of the students, modeling the student's future and the strategy for the student's future life in the context of continuous education (life-long learning). Undoubtedly, the problem of mapping students' individual study pathway is currently one of the topical issues in modern education, and, in order to choose the most effective models of designing ISP, a thorough research into the global experience in this sphere is essential.

The major principles of constructive learning in an educational environment that contains 3 levels:

– "Person-to-person" level (face-to-face communication);
– "Person-to-electronic educational environment (EEE)" level (remote or mixed communication);
– "Adaptive educational content – invariant educational content" level.

CHAPTER 4. COMMUNICATIVE AND DIDACTIC ASPECTS OF MAPPING AN INDIVIDUAL STUDY PATHWAY IN ELECTRONIC EDUCATIONAL ENVIRONMENT

Currently, one can easily state that the major objective of the modern education is to get a person prepared for living in the rapidly changing world with its global-oriented multi-cultural environment. In its essence, global education unites various educational systems and models, based on divergent cultural, religious, philosophical outlooks. Building up a unified educational environment is one of the top priorities for the nearest future. However, this is not an easy task, based on preserving national identity on the one hand, and involving cultural and educational integration on the other. Today's concept of education means lifelong learning. These processes cause the knowledge-based approach in education to be gradually replaced by competence-based one.

Nowadays we can witness a number of educational processes migrating into the Internet and, consequently, their becoming more transparent and more or less multi-cultural

It is obvious that with the application of electronic educational environment (EEE) the didactic functions of a tutor will be changed, and the whole educational process will become autodidactic. And, before mapping an individual study pathway, one must decide how this individualistic approach will be applied in EEE where there is no immediate communication between students and tutors. When studying via the information technologies, a student is supposed to develop individual learning skills and to get well acquainted with the up-to-date on-line education technologies, which means that the student's self-motivation becomes a more important factor.

A tutor's role here will be taken by the EEE itself. However, for this purpose it is necessary to select and set the criteria for running individual study process (for instance, a student's cultural and cognitive profile, consisting of the emotional and activities components).

When a student interacts with it, EEE fulfills several important functions:

– Informational, i.e. providing access to various kinds of information, both educational and legal.

– Motivational, i.e. creating and sustaining comfortable environment for the study process, allowing planning and controlling a student's individual activities, as well as a tutor's professional ones.

We believe that, in order to fulfill this individualistic approach to education via EEE, it is necessary to introduce several parts (stages) which will identify the best study method for each student. At the first stage of working with EEE, it is reasonable to run a criteria-oriented testing (a set of tests) to identify a student's cultural-cognitive profile, as well as other basic parameters: motivation, basic knowledge level, information and communication skills, and professional interests. Of course we must take into account the possible interactions between these parameters and their changes and variations in the educational process. Bearing this tendency in mind, it is reasonable to run re-testing periodically in order to correct the selected pathway. We believe, the received information must contribute to developing an individual study pathway based on the best suitable study technique for each student. Speaking of didactic functions of EEE, we can point out the possibility of the student teaching the system. This may run the following way: the system's intellectual component processes the data received when analyzing the tests and the student's feedback after the courses were complete, and corrects the selected study pathway. Then it collects the statistic parameters to form a data base, thus forming a certain set of tendencies. Later, these collected data can be used for personalizing the study process of further students at the earliest stages of mapping their individual pathways, i.e. for adapting the educational content and its forms to the culture-cognitive profile of each student. The EEE smart content is supposed to be formed according to the output rules, adjusted to a student's culture-cognitive profile.

Of course, the mechanism of mapping individual culture-specific educational pathway of an EEE student can be partially of completely based on tutor guidance.

Also, Individual Study Pathway (ISP) can be mapped and adjusted through recommendation services which will suggest best suitable courses for a student and, if a student decides to take courses outside the recommended range, identify possible pitfalls. Evaluation of task and study materials in the major courses of the education path can be done similarly. Thus, the mastering a course is supposed to follow the path best suitable for a student's information processing skills. We must also point out that this evaluation method can be applied when as-

sessing both major and outside-the-range courses, thus formulating recommendations for the student on how to develop their competence profile on the basis of the courses provided in the system, as well as doing those in free access. Summing it up, implementing the individual study pathway will produce a specialist's competences profile.

Developing and implementing ISP is a complex process that includes the following components:

1. Forming an individual information space.
2. Personalizing educational resources.
3. Personalizing educational objectives and finding meats for their achievement.
4. Adapting educational content and interface in EEE.
5. Achieving synergy effect through combining individual reflection and self-organization capacities.

Designing ISP is a step-by-step (iterative) procedure where the order of its above-mentioned components must be determined on the basis of a student's interim achievements. Developing the whole personalization process is supposed to follow two major directions: vertical and horizontal. In its vertical direction, ISP will consist of operations and activities component, representing an algorithm of achieving the education's objectives. In its horizontal view, ISP represents the "human dimension", formulating and fulfilling the educational processes within EEE.

As an example of implementing EEE principle in the real-life education process, National Research University "Higher School of Economics" (HSE) has introduced Learning Management System (LMS). Its major objective is to improve the quality of didactical and informational maintenance of the educational process both for the students and tutors, as well as for the department management. Implementation of this educational instrument means the students' active involvement in the educational process, stimulating constant student-tutor interaction, both on- and off-line. When running LMS, a user's authentication is essential. A personal set of courses with different access levels is drawn up for each user. LMS provides integration with the unified schedule forming system based on the current study programs, lists of tutors and student, university layout, as well as a student's status (the system includes four such statuses or modules: matriculant, university student, graduate student, post-graduate student). The system automates HSE's interaction with its major client – a student – throughout their whole

university life an after graduating. The platform provides vast opportunities for collecting and analyzing information, effective management, conducting and control of the study process. Based on the universalism principle, LMS allows the following to the tutors: providing the courses materials (storing files, videos, podcasts etc.); managing students' activities for the discipline and checking their performance (running assessment register, checking their projects); using various communication means for the educational purposes (forums, polls). For a student, LMS is becoming more and more important with each step in their educational process. Besides downloading courses materials from EEE, students are also granted access to corporate students' e-mail, on-lone credits records and assessment register for each course, providing them with up-to-date information of their current performance and final marks. As elements contributing to individualizing a student's study pathway, we can point out their ability to choose the courses from the elective options. It is supposed, that the students choose their options with the objective of forming and enhancing their major discipline competences. When applying for a course, a student accesses the discipline's page via his/her personal login in LMS. Despite its containing a vast range of tools and components, we cannot claim that currently LMS is an EEE which can provide for an individual study pathway. It is possible that implementing individualistic and competence-based approach, introducing a more "sensitive" interface, purposeful introduction and synchronization of student-tutor interaction, integrating users' social network profiles and RSS preferences, sending data to the mobile gadgets and other options would contribute to further introducing this system as an important part of the educational process.

4.1. Smart Educational Environment as a Platform for Individualized Learning

Global education combines different educational systems and models, which are based on differentiated cultural, ideological, religious, philosophical, and axiological worldviews. Undoubtedly, integration processes are an integral part of globalization the world becomes "integrated" one way or another. Formation of a unified educational space is one of the priority tasks of the near future. However, this is not an easy task, which is based on the dichotomy of, on the one hand, preserving national identity, and processes of cultural and educa-

tional integration, on the other. Now we can observe the transition of a number of educational processes into the online context and, as a consequence of openness, the acquisition of partially or completely multicultural principles. Of course, in a multicultural context, cultural enrichment, expansion of general and professional outlook, teachers and students face a number of problems, mainly with pragmatic reasons. Despite the processes of globalization and integration, culture of each country, anyway, is reflected in the educational process and, in many respects, its causes, which, in turn, entails the specificity of training content, values and objectives of education, teaching methods, pedagogical discourse, the specifics of building educational trajectory, etc.

Today's concept of education means lifelong learning. These processes cause the knowledge-based approach in education to be gradually replaced by competence based one. Nowadays we can witness a number of educational processes migrating into the Internet and, consequently, their becoming more transparent and more or less multicultural.

Currently, a significant part of educational process transforms into online format.

Obviously, in the modern Educational Environment (EEE), tutor's didactic functions will be modified, and the problem of an individual approach, motivation and commitment of student in the process of learning will rise most sharply. The learning process in the MEE is mostly autodidactic. So it is necessary to determine the manner, in which an individual approach may be realized in EEE, where the nature of communication is predominantly mediated, before designing an individual educational trajectory. In our opinion, an individual approach in a multicultural e-Educational space will look like an adaptation of content and interface to a student's personal cultural and cognitive profile. The purpose of moderne education is to create conditions in which educational path could be formed and adjusted with the help of a trainee. We believe it is appropriate to establish the criteria for determining cultural cognitive profile of a person, in order to make possible further technical and methodical adaptation of educational content and interface. Control of knowledge and qualification boundary will be realized by "competence-based profile of students". It is also possible to create advisory service facilitating "build-up" of professional competence according to cultural-cognitive profile of an individual. To improve "cultural intelligence" of tutors, we suggest to use online cultural assimilator.

4.2. Mapping an Individual Study Pathway in Electronic Educational Environment

It is obvious that with the application of Electronic Educational Environment(EEE) the didactic functions of a tutor will be changed, and the whole educational process will become autodidactic. And, before mapping an individual study pathway, one must decide how this individualistic approach will be applied in EEE where there is no immediate communication between students and tutors. When studying via the information technologies, a student is supposed to develop individual learning skills and to get well acquainted with the up-to-date online education technologies, which means that the student's self-motivation becomes a more important factor. A tutor's role here will be taken by the EEE itself. However, for this purpose it is necessary to select and set the criteria for running individual study process (forinstance, a student's cultural and cognitive profile, consisting of the emotional and activities components).

Individual Study Pathway (ISP) should be mapped and adjusted through recommendation services which will suggest best suitable courses for a student and, if a student decides to take courses outside the recommended range, identify possible pitfalls. Evaluation of task and study materials in the major courses of the education path can be done similarly. Thus, the mastering of a course is supposed to follow the path best suitable for a student's information processing skills. We must also point out that this evaluation method can be applied when assessing both major and out-side-the-range courses, thus formulating recommendations for the student on how to develop their competence profile on the basis of the courses provided in the system, as well as doing those in free access. Summing it up, implementing the individual study pathway will pro-duce a specialist's competence profile.

In order to develop custom approach in education for an electronic education platform it is necessary to set several modules (stages) for composition of most optimal model of education for each student. In the first stage of interaction with digital educational platform, it would be most appropriate to conduct criterion-oriented test, which would not only determine cultural-cognitive profile, but also collect information about other basic characteristics, such as: motivation, educational background, informational and communication technology skills, professional interests. However, it is necessary to take into consideration the

possible dynamic nature of before mentioned variables. It would be rational to retest an individual periodically, and make corrections to the selected education course.

Collected information should be used to compose custom courses with most appropriate educational method selected for each student.

As for didactic functions of EEE we would like to point out a possibility for a student to "teach" the system. One variant of such system is when intellectual component of system analyses both collected data from conducted tests and student's reflections about courses he/she has completed. If necessary, it amends selected educational strategy based on analysis results. Further aggregation of statistical parameters in database will allow to perceive various trends. Moreover, accumulated data would be used in the process of tailoring education experience to new students in the earliest phases of customization. In other words, it would be used in the stage of adaption of learning method and content with a consideration of peculiarities of cultural cognitive profile of a student. We assume that educational content in EEE would be presented according to personal output rules, formed by cultural cognitive profile of students.

4.3. Models and Techniques of Interactive Didactic Support of Learners in Virtual Learning Environment

Support of modeling individual educational trajectory is mainly aimed at forming an environment for mapping a personal success as professional fulfillment through the following (Taratuhina, Aldunin, 2014):

– Forming virtual educational space which interlinks off-line courses, off-line events and on-line materials and events, generated by active experts and practitioners.

– Tutor' s support in forming a specialty' s competence profile and modeling the labour market.

– Forming a student' s competence profile and modeling this profile on the ba-sis of targeted preferences.

– Personalizing the educational environment and content.

The major service function for each user or participant group (Fig. 4.1) in the active learning process is to form a virtual educational environment as a system of interrelated study courses through interlinked competence profiles of the courses and important events both for a university campus, and for online experts in a course's field of application.

Basic Models for Realizing The «Smart Tutor» Service Model of educational program, MKp(Uj, Ko), includes a system of study courses Uj**,** interlinked with each other and with the specialty's competence profile.

Model of competence profile of curriculum MKp(Uj, Ko) includes: (1) Model of relations between courses *Ui* from the perspective of mastering certain competence.

In particular, for such a multidisciplinary profession as "business informatics", oriented to prepare a range of specialists - this would be presented as a network model that can be constructed using the methods of data-mining, handling text courses. (2) Model of accumulation of amount and quality of competences in relation to each of the possible specialization of labor market of a particular course; (3) Model of competence profile of curriculum *Ui* is a model of the relationship between knowledge, skills obtained and competencies. (4) Model of competence-profile of labor market of the curriculum graduates is a "summary" of competencies that determine the possibility of taking every competence on the labor market.

Accordingly, if the selection criteria of various academic disciplines are inputted, it becomes possible to receive a slice of the full set of vacancies. Specific professions on the market can be considered as a qualitative scale, which measures the level of professional success. Moreover, apart from such representation of the future professional activity of the student, we would like to implement a system that would take into account some personal parameters associated with the psychological, cognitive, communicative personality characteristics, which influence the choice of life goals.

At the same time, every study course of the program, *Ui,* must be represented within the three-element model of knowledge and skills, connected with the competences, *K***i:** knowledge and skills of the major course; additional theoretical knowledge and skills related to the course's objectives and based on competences, generated by active groups of experts currently developing theoretical and practical knowledge; practical knowledge of the level of application of skills, formulated by typical organizations representing the market (Fig. 4.1). In particular, the major university departments, being representatives of the labor market for the graduates, provide synchronization of competences acquired during the education, with those demanded in the market.

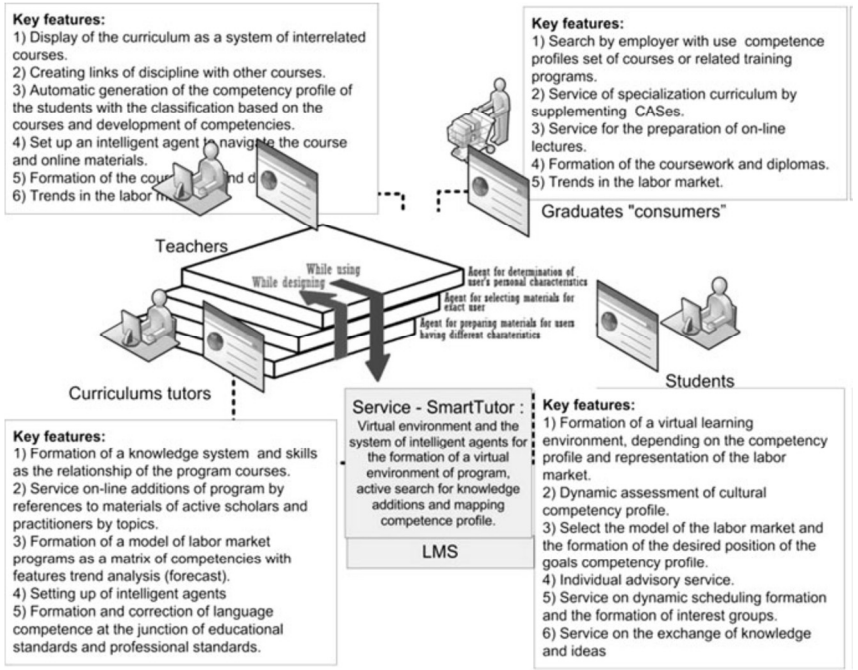

Figure 4.1. Major service function for each users or participants group

Developing a set of models of a study course's competence profile must be based, on the one hand, on the ontological approach to designing a model of the courses' links with each other, and on the other, on the methods of the decision taking theory for building a student's motivation function with flexible selection criteria, and on the association network theory for describing the principles of forming a student' s knowledge model.

The following major methods of artificial intelligence have been analyzed: knowledge representation methods, argumentation modeling methods, education modeling and methods of knowledge acquisition by intellectual systems. The most suitable approach to solving creative tasks is the logics-semantics approach, showing a task as a structured model with links between elements (Berners Lee, Lassila, 2001; Osipov, 2011; Osuga, Saeki, etc., 1990; Robert, 2007; Shihnabieva, 2008; Shihnabieva, Omarova, 2011).

Application of up-to-date scientific and didactic approaches allows a regulating of the workload of a student. At the same time, the course presentation form must also change: the traditional linear structure must be substituted by hypertext and hypermedia form, allowing increase in the volume of the course materials, more forms of its' presentation, as well as better search for the necessary information.

These approaches help develop self-study and creativity skills.

The basic knowledge representation models have different ideas underlying them. Empiric models are based on studying into the principles of human memory and task-solving processes. The second group of models is theoretical ones. They are based on formal logics and combinative models. A semantic net is a directed graph. Its nodes are concepts and objects, its edges are links between objects.

Semantic networks fall into extension and intension ones. Intension semantic network describes names of object classes. Extension one describes the relations in a given situation.

The proposed approach to structuring and classifying educational tasks contributes to a student's forming knowledge system in the field of physics and mathematics. In the course of the research, we have developed semantic models for nature studies disciplines, providing rational sequence of developing study path models, fulfillment of requirements of the curriculum of certain courses.

Here is an example of semantic network on the topic "Matrices and their operations", "Linear Algebra" course (Fig. 4.2). Semantic model, representing the logical structure of the study materials and links between the concepts, allows better understanding of the topic. The model represents major concepts and causality relation between them.

In open education systems it is necessary to design an environment capable of integrating resources of various automated educational systems. This environment is called an information educational system for open learning. Such systems can be represented by a system of university departments and sub-faculties, educational institutions and training courses (majors).

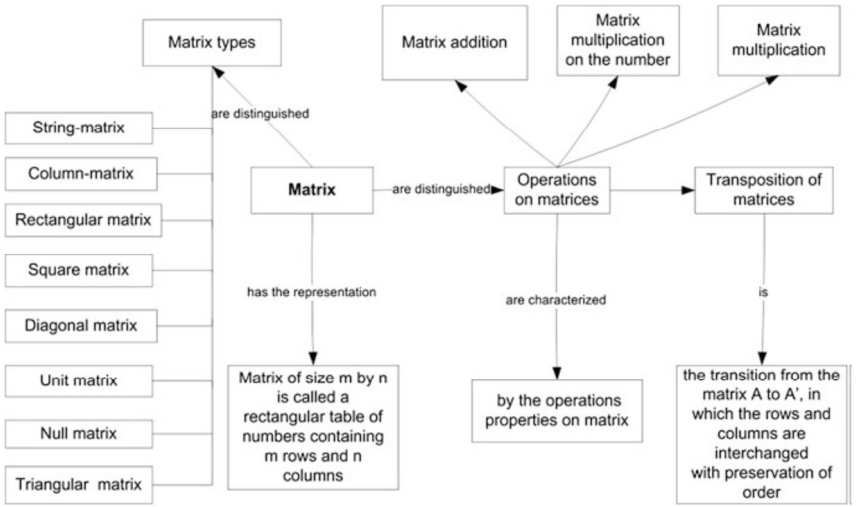

Figure 4.2. Semantic model of structured knowledge for "Linear Algebra", topic "Matrices and their operations"

Interactive e-courses are an important means for a student's self-study process, however better results can be acquired through multimedia training systems, both separately and within the traditional education form. The innovative course is aimed at acquiring both generally cultural and professional competences, allowing self-learning when necessary.

4.4. A Possibility of Building a Learning Trajectory Based on Culture Specific Features

Based on the processes above, the process of cultural adaptation of multimedia content for each student according to his cultural characteristics appears. It means that, the initially identified student's cultural and cognitive profile will determine the specifics of the learning process, preferred learning tasks, working with educational information, and methods of getting feedback. We suppose that the difficulties caused by the distant form of educational process can be overcome, if subjects of pedagogical process have cross-cultural competency and there is synchronization of activities. In fact, consideration of the student's cultural and cognitive profile specific and, as a consequence, the nature of its educational activities will meet the expectations of students

and make the learning process more effective. We also suppose that two main areas must be studied for creation of smart EEE: the selection and design of educational content according to SCCP and selection of interface options, text and illustrations (including information resource pages) (Taratuhina, 2014; Taratuhina, Aldunin, 2014).

Everything, from evaluation of user's cultural parameters to generating personalized pages for him, can be automated. At the initial stage, we can query the user, and then select the most appropriate information for him as follows (Fig. 4.3).

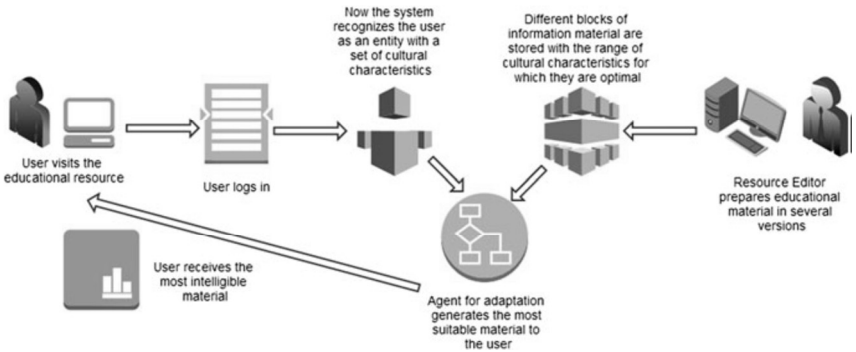

Figure 4.3. Scheme of the formation of individual pages for users based on their cultural specificity

It is important to say that not only internal but also external courses and educational programs may be assessed this way to provide student with recommendations for development his competence profile by both internal and public external courses. External courses should be selected on the basis of the possibility of certification for already selected learning directions and to improve knowledge in areas, which student is apt for. Regular analysis of SCCP development trends should be used as the basis for such an advisory service.

Designing a smart environment is, first of all, based on adapting and filtering the educational environment to fit a student's cultural-cognitive and competence profile.

Thus, we can see, that on the 1st level it is essential to develop cultural intellect of the participants of educational communication. The 2nd level involves designing the EEE, with its own cultural intellect and capable of presenting knowledge according to a competence profile. The 3rd level means composing an adaptive – in some cases invar-

iable – educational content (courses' semantic maps, minimal thesauri for disciplines).

We assume, that with this approach a student will mostly use information handling techniques best fitted for his/her own style in the learning process. It is worth noting that both internal (from own faculty or university) and external courses could be graded and presented to a student this way, with system providing student with recommendation on his/her competence profile improvement using all relevant and available sources.

In the end, completion of such personal education course would form up a certain competence profile of a specialist. Undoubtedly, the problem of mapping students' individual study pathways is currently one of the topical issues in modern education, and, in order to choose the most effective models of designing ISP, a (Taratuhina, Avdeeva, Mirishli, 2014; Taratuhina, Avdeeva, etc., 2015).

CHAPTER 5. MULTICULTURAL TEACHING ENVIRONMENT: PROBLEMS AND SPECIFICS OF KNOWLEDGE TRANSFER

5.1. Problems and specifics of knowledge transfer

Currently a multicultural student audience is by no means an unusual occurrence. This applies both to the traditional educational format and to remote educational practices. As a result of a survey of teachers carried out by the authors, who have professional experience in a multicultural teaching environment, a number of difficulties have been identified. They are specific in particular to these types of student audiences and have no place in monocultural environments. Among these are various familiar models of communication with a teacher, specific features of presenting teaching information and educational content, decision-making, the attitude towards creative approaches in the course work, an ambiguous understanding of the academic pursuits and terminology, the preferred type of monitoring and measuring materials, etc. In this case, we face such the phenomenon of educational cross-culture. In the context of interest to us, educational cross-culture is a combination of three elements:

1. teacher culture (national and professional);
2. student culture (national and professional);
3. semiotic environment (of educational institution or online resource) and thesaurus of the course unit.

A multicultural education environment is essentially an educational cross-culture. ***Educational cross-culture*** is an environment covering a collection of heterogeneous information and pedagogical environments which are interacting in the format of educational communication and learning activity and are in a “diffuzziness” state. ***The original cross-culture*** (culture "native" to an individual) is a semiotic education, discursively expressed in the form of thesauruses and elementary knowledge dictionaries and reflecting the pragmatic specifics of educational communication processes.

In this context, it is reasonable to bear in mind the etic and emic approaches – as approaches providing a means for a both culture-specific and invariable look at the teaching process in the multicultural environment (Table 5.1).

Emic approach	Etic Approach
Studies behavior in the "teacher – student" system within the system	Studies behavior in the "teacher – student" system outside the system
Studies only one culture	Studies a variety of cultures in the comparative context
Criteria are correlated with the internal system characteristics	Study criteria are considered as absolute and universal

Table 5.1. Differences between etic and emic approaches in the educational context

The method of cross-cultural study in the educational process has become an "environmental" method expressed in the study of student micro- and macro-environments. Inasmuch as any study of a person's environment is associated with the re-direction - from an individual to the environment and from the environment to an individual - in order to optimize communication processes in the multicultural teaching environment G. Hofstede's parametric model was selected and is presented in the context of educational situations. The purpose of this article is to present possible diffusion processes in educational environments or knowledge transfer in a multicultural environment using the environment-education language, so that the teaching process may predict reactions of people from different cultural environments. The problems of student adaptation to a foreign environment will be understandable if we are able to adjust our professional pedagogical behavior in communication when communication difficulties come up. In other words, a constructive pedagogical action minimizes culture shock and semantic distortions in the communication environment of the educational cross-culture. What does a teacher need to know for this? The answer to this question is one of the research objectives of cross-cultural didactics.

In previous papers, the authors have formulated the basic provisions of cross-cultural didactics, including the concept of a cultural-cognitive personality and audience profile, national and professional styles of thinking, information handling, culture-specific educational discourse, etc. Depending on these parameters, an adaptive style of teaching can be selected to understand the cultural and cognitive specifics of a student and, thus, the selection of appropriate content, methods, discourse, monitoring and measuring materials, as well as motivational and axiological determination.

5.2. Cultural – cognitive profile of a multicultural student audience

The tables above make it possible to construct a cultural-cognitive profile of a student (if necessary, a group) and select techniques of effective teamwork. Thus, it is possible to select a communication strategy in each subgroup of the study group. Based on these tables, the first class assignments for submission can be also done, e.g. in mathematics using the mother tongue for each student (taking into account that the Russian language is almost a mother tongue in the subgroup of students from CIS countries,). The authors always selected mathematics as the first assignment for submission as a carrier of abstract knowledge with the universal semiotic system and, therefore, having the least amount of stress component in communication with students. The assignment for submission is divided into three levels of complexity; the choice is free. Only some parameters of interest to us in terms of a specific situation of the pedagogical process or research can be taken from the proposed scheme for the model.

As a result, the cultural-cognitive models of students and their teaching style can be "derived". Let us cite as an example a quite limited and polar vision of features of the educational communication in a culturally-specific context. In practice, there can be a good many options.

5.3. Philosophy of pedagogical constructivism in a polycultural environment

The educational process in a multicultural environment is provided at three levels

1. "Person-to-person" level (face-to-face communication);
2. "Person-to-electronic educational environment (EEE)" level (remote or mixed communication);

– "Adaptive educational content – invariant educational content" level.

At the "person-to-person" level, as mentioned above, depending on the cultural-cognitive profile, a learning style, appropriate content, methods, discourse, monitoring and measuring materials, motivational and axiological determination can be selected. In particular, methods and techniques of interactive didactic support of students in a virtual multicultural teaching environment are of great interest. The considera-

tion of cultural and pragmatic aspects in designing the structure, content and interface of electronic textbooks and teaching environment, implying a set of pedagogical instruments (specifics of motivation, specifics of presenting educational materials, processing, monitoring, and feedback) is of no little interest.

At the "person-to-EEE" level, consideration is given to problems of educational cross-culture in the process of remote or blended learning. It is necessary to highlight the main areas of education "smartization":

– developing cultural intelligence, forming and building teachers' competence in the area of cross-cultural didactics, learning problems of the best practices with multicultural audiences;

– systematic understanding, the constructive building of an individual educational path in EEM, adapting and using the best international practices in this area;

– problem of an appropriate selection of multimedia technologies and teaching methods for various cultural groups;

– role of unique features of the learning style when interacting with intelligent tutorial systems.

"Adaptive educational content – invariant educational content". Adaptation means an adaptation of educational information, methods and monitoring and measuring materials to the specifics of a student, as well as compilation of cultural-specific elementary dictionaries on the subject (the ambiguity of terminology in different languages). The invariant content implies a compilation of universal elementary dictionaries in subjects or semantic maps.

Therefore, at the first level of the educational process, it is important to develop cultural intelligence in a multicultural environment as an ability of educational communication subjects to understand little-known contexts, and adapt to them; at the second level - EEM having a cultural intelligence should be designed; and at the third level - an adaptive, in some cases, on the contrary, an invariant educational content (elementary dictionaries of knowledge in subjects) should be formed. This multi-step approach enables us to make the knowledge transfer process in a multicultural environment more constructive.

Based on the definitions of relevant subjects of academic disciplines, their connection can be searched for. The educational experience suggests the need to search for subject domain models (either specific or abstract) allowing us to interpret the knowledge studied. Therefore,

generally a problem of intersubject connections in various schools, i.e. secondary and higher, comes up. It should be noted that the concept of "interdisciplinary connection" is more general than the concept of "intersubject connections". The latter concept is interpreted by us as a connection between the scientific knowledge subjects learned in course units. Therefore, the problem discussed in this article can be extended to the inter-subject connection of mathematics with the mother tongue. In other words, at a level of development of the invariant educational content we design an environment of quite predictable set of reactions. While investigating the language relationship, we solve several tasks: determining the performance level (mathematics), defining an emotional component of learning (interest, sociability, goal setting), preference in decision making. Having obtained answers to these questions, we have the possibility to adjust the communication strategy in the real educational process in accordance with the strategies set out in Tables 3-5. The cross-curriculum connection is provided at a level of elementary concepts of the subjects, i.e. mathematics and mother tongue. To do this, an elementary dictionary (if possible) or a minimum first-level dictionary should be created, with a correspondence set up afterwards between them. It is known that the elementary mathematics dictionary studied in secondary school was proposed in the paper.

The first-level concepts of a minimum dictionary can be formed in a natural way, using elementary concepts. Depending on the learning needs, it is possible to construct the following levels of concepts using from fifteen to nineteen concepts of the elementary dictionary, thereby forming the following levels of knowledge. Further on, the words from the elementary dictionary should be translated into the verbal environment native for a student through examples, thereby fixing the "islands" of stable knowledge in a learning environment new for him. This, in turn, on the one hand, entails a reduction of the stress load on a student in the learning process, and on the other hand, contributes to the study of theoretical and practical material in the new language environment.

Let us assume that $A = \{a_1, a_2, \ldots, a_{13}\}$ are words of the elementary dictionary; B_n is a set of words of the natural dictionary, which are not terms, including a universal mathematical semiotic system Q (i.e. $Q \subset B_n$); P are rules of addition (linking, output) of words from A and B_n. As a result of using the rules for elements from A, set

$B_T = \left\{ x \mid x = a_i \beta_s,\ a_i \in B_n,\ \beta_s \in P,\ \left(i = \overline{1,13},\ |s| < \infty \right) \right\}$ is formed, representing a set of terms obtained as a result of actions with elementary concepts.

Let us call set $G = \{A, P, B_n\}$ a grammar, words $x = a_i \beta_s$ words from a higher level (as compared to the elementary vocabulary) dictionary; B_T – terminological dictionary contained in the thesaurus. Then $L(G) = \left\{ x \mid x \in B_T \wedge A \xrightarrow{G} x \right\}$ will be called a language (in our case a mathematical language of the secondary school). Let us consider a triple $\langle L(G), T, E \rangle$, where $T = t_j$ are specific instructional devices and their combinations (set T is finite). In this case, the environments: individuals (microenvironments), teaching environment and other environments are combined. Let us bear in mind that a number of subenvironments are finite, and they tend to vary over the course of time. Therefore, the environment under study will be called an educational individual environment. (Zharov. Taratuhina, 2016).

In modern society, tutors often interact with a multicultural student's audience in the traditional or online format. The majority of tutors emphasize the problem of constructive knowledge transfer in a multicultural learning environment as the main problems in this context, in addition to cognitive, communication and psycho-pedagogical specifics. The development of education that is receptive to cultures needs not only specialists in different subjects, but also teachers who have knowledge in the cross-cultural differences sphere. These days training courses and programs including distance learning are monocultural that is not fully meet the needs of students in information society. Thereby, the main question is how to build constructive education in the cross-cultural education context. We claim that nowadays there is a necessity of training the specialists with a developed cultural intellect. In this paper we develop some ways of optimizing the education process in a cross-cultural environment.

Today multicultural student's audience is not a rare occurrence in both traditional and online educational practices. Thereby, we conducted a survey of teachers who had a similar experience and as the result we have identified a number of specific difficulties to these types of student's audiences that do not encounter in mono-cultural environ-

ments: different communication models in the "teacher-student" system, culturally-specific peculiarities of educational information and content representation, cognitive features and the decision-making specificity, different understandings of "creativity" concept, an ambiguous understanding of educational tasks, terminology, preferred type of test materials, etc. In this case, there is a question: how to provide the constructive build-up of competence model in the national culture and professional polyphony framework? In other words, how to organize a "course's design" which is directed at the multicultural audience and provide constructive knowledge transfer? Thereby, we face with phenomenon of an educational cross-culture. In this paper we define educational cross-culture as the totality of:

1. Tutor's culture (national and professional).
2. Student's culture (national and professional).
3. Semiotic space (of educational institute or online resource) and the discipline's thesaurus.

Cross-cultural didactics – learning theory in a cross-cultural environment

At this stage we claim that the developments in the field of learning theory in a multicultural environment – a cross-cultural didactics are absolutely essential. In our view, cross-cultural didactics consists of the sections that investigate:

1. Objectives and values of education in different cultural groups.
2. General peculiarities of cognitive activity in different cultural groups.
3. Learning styles in different cultures.
4. Common features of teaching methods and test materials in different cultural groups.
5. Peculiarities and problems of pedagogical discourse (in particular, academic writing) in a multicultural environment, including the online environment.
6. Developments in the cross-cultural media didactics sphere.
7. Issues and peculiarities of constructive knowledge transfer in a cross-cultural education environment.

Tools that facilitate the organization of constructive education process in a multicultural environment: a model of cultural-cognitive personality's profile and a model of cultural-relevant teacher's intelligence.

In our opinion, educational activities consist of operational and cognitive components. In order to describe cross-cultural differences we have to consider cultural models by G. Hofstede, R. Nisbett, E. Hall, M. Holodnaya, R. Lewis; S. Myasoedov, H.Triandis, F.Trompenaars. We can define a number of the following parameters, underlying analysis of the culture-related aspects of behavior, mentality, activity and determining specificity of cultural-cognitive personality profile: specific nature of activity; specific features of information representation; specific features of mentality and attention; specific features of social communications; dominant values (Table 1.13).

In our opinion, a cultural-relevant teacher intellect model looks as follows (Table 5.2).

Cognitive – Emotional-Operational components of educational communication	
Learning style	Teaching style
Understanding the overall specifics of cognitive activity of the different cultural groups' representatives	
The organization of learning content	
The organization of teaching methods	
The specifics of pedagogical discourse	
The peculiarities of control and measuring materials	
Reflection and constructive feedback	

Table 5.2. Cultural-relevant teacher intellect model

CHAPTER 6. SPECIFICITY OF WEB USER INTERFACE (WUI) ORGANIZATION IN DIFFERENT CULTURES

6.1. Statement of Problem and Evaluation of the Relevance of Chosen Data Domain

The given research aims at analysing and evaluating the necessity to differentiate user interfaces on the web for various culture groups, as well as at producing recommendations for improving the ergonomics of the web resources targeting multicultural audience.

Nowadays, cross-cultural problem is one of the basic things to consider when creating e- resource focused on different cultures (Taratuhina, Aldunin:2013). Since the advent of using information technology for delivery of information, new tools and methods to present it have occurred. Some of them both partly decrease and increase psychological tension of the process of acquiring knowledge. According to G. Uzilevsky (Uzilevsky, 2000), ergonomic semiotics is a scientific practice, which studies the problems common to semiotics, linguistics and ergonomics, and is able to resolve a number of problems associated with the need to make information intelligible to the target audience, depending on the cognitive specificity caused by cultural differences. In the era of worldwide Internet's intromission to most of areas of life, the study of cross-cultural aspects of ergonomic semiotics is the most important.

The book aims at describing the specifics of organizing the user interfaces in different cultures and at providing practical recommendations for developing culture-sensitive interfaces. The object of the research is the culture groups of the Web resource target audience. The subject of the research is a possibility of grouping them in order to determine the number of the site interface options required and to predict the degree of dissatisfaction with the site interface for different culture groups of the target audience. Pragmatic factors must necessarily be taken into account during the process of creating and monitoring resources aimed at multicultural audience. There are different cognitive models of perception and processing of information in the eastern (collectivist and inclined to dialectic) cultures and the western (individualistic and inclined to formal logic) cultures. In the West, the information is mostly directly perceived through the prism of person's individual perception and is superimposed on the existing information back-

ground. In the East, users simply collect information without personal critical reflection during the consumption of the information content.

On this basis, determination of the nature of user interface and establishment of the principles of development of efficient and convenient sign vehicles to communicate with different types of software and hardware should be included to the purposes of ergonomic semiotics. For this investigation, cross-cultural context for the user interface development will be the object of the most interest, because of the need to adapt information for cognitive specificity of different cultures. In the above-mentioned context, ergonomic semiotics offers the following research areas: • Identifying and examining approaches to creation and usage of user interface as an interactive multi-level system in different cultures;

• Color code in different cultures;

• Iconic language in different cultures;

• Music code in different cultures;

• Specific parameters of users' behavior on the sites due to the specifics of thinking and acting in different cultural groups. Theoretical and methodological framework for this study is the following: the works of Geert Hofstede on cultural dimensions, Aaron Marcus' works on the culture-sensitive interfaces development, statistical research in the field of conversion conducted by Forrester Research Inc. and Listrak agencies, research in the field of the Russian Internet users network activity conducted by TNS and a number of other studies mentioned as the reference. The empirical basis of the research is the information about cultural dimensions of 110 countries from the work "Cultures and Organizations 3rd edition 2010" (by Geert Hofstede), the results of the online survey in the anonymous multicultural internet-community 4chan.org/int and data of the authorial insider's view.

User Interface from the Point of View of Ergonomic Semiotics

The user interface in the context of ergonomic semiotics can be defined as a multi-level interactive information system, consisting of a natural language, iconic language, and color and music codes. The term "user-friendly" can be considered applicable to the pragmatic aspect with the convenient presentation of verbal and iconic segments. In different cultures, differentiation of the forenamed parameters will be noticeable. When talking about ergonomic semiotics' requirements and evaluation of user interface, it is appropriate to differentiate them in:

•**Pragmatic requirements** include ease of learning, ease of intussusception and usage of information that improve the efficiency of the user activity, etc. In particular context of these requirements, during the further examination of various aspects of the design of user interfaces the cultural specificity of users will be taken into account. From the perspective of pragmatics user interface should match the cognitive, psychomotor, emotional, motivational characteristics of the users, as well as comply to their needs and objectives;

•**Semantic requirements**: resistance to semantic errors, backbone connections, availability of feedback on the performance of the user. From the standpoint of semantics, interface should meet the standards of any domain of knowledge with the maximum regard to the users' subject language

•**Syntactic requirements**: flexibility, freedom to choose the means of information retrieval and the realization of these relations in a particular information system;

•**Sigmatic requirements**: the relationship between the object, its thinking reflection and signs which represent this reflection; in other words, the logical connections and meanings; Thus, multicultural context assign the following main tasks, which should be solved in the future work:

1. Defining the criteria of the user interface's suitability for representatives of different cultures;
2. Description of the conformity of functional and graphical features of interface specificity to different cultures users' cognitive specificity, in order to avoid possible frustrations, mistakes, and slowing tasks solving;
3. Description of the basic principles of national media cultures.

6.2. The History of Research

Exploring cultural differences, R. Nisbett (Nisbett, 2003) identified several factors, which vary depending on the cultural affiliation and have influence on the behavior of individuals: "attention to the field" dominates in the East, and "attention to the main objects" – in the West. Nisbett carried out a series of experiments with American and Japanese users, which showed that the Japanese were paying attention to the features of the surrounding background about 70% more often than Americans were, even though they both were equally likely to mention the

details of main content. In addition, Japanese almost twice as often noted uncertain linkages and relationships with the environment. Nisbett saw the roots of these differences in the cognitive-semiotic mechanisms inherited from either holistic (ancient Chinese) or from the analytic (ancient Greek) system of understanding the world. Moreover, relying upon G. Hofstede's studies, it is possible to conclude that Asians are more liable to perceive the whole picture almost without using the division into categories and formal logic. They rely on the dialectical and empirical aspects. At the same time, Europeans prefer strict cataloging and formal structure. According to M. Holodnaya's research (Holodnaya, 2004), cognitive style reflects the way of perceiving, analyzing, structuring and categorization of the world, the style of learning. "High cognitive complexity" dominates in most Western cultures that means a multi-dimensional model of reality in a variety of relationships. While Eastern cultures are characterized by "low cognitive complexity" – unique, simplified interpretation of reality.

All of this specificity should be somehow reflected on the user interaction with e-resources, and understanding of it will help to adapt e-resources to socio-cultural preferences of users. Developers, who have to deal with users of different cultural groups, of course, should consider the above-mentioned features. First of all, the following should be taken into account when structuring and cataloging information: the representatives of Western cultures often requires detailed information on a specific aspect, whereas representatives of Asian cultures will probably want to explore a question in common. Initially it was assumed that the factor uniting user and interface is information. Now it is widely thought that it is activity. It seems to us that both factors have a place to be: working with information and forming ideas about the subject should be considered as a strategic activity, while the interaction with the interface aimed at obtaining this information - as a tactical activity. It is possible to define activity as a set of actions, which ensure meeting the goal. It can be assumed that in different cultures the structures of acting differ by the spatio-temporal characteristics. Following the classification of R. Lewis, the specificity of the different cultures can be classified in monoactive, poliactive and reactive styles.

6.3. Using the Template

Interface creation and design in a pragmatic way can be reflected with a "model of the world" metaphor. Therefore, the main task of in-

terface ergonomic design modeling and preparing content for e-resource is analyzing the following criteria for the construction of a model:

• Consideration of the relationship of thinking and acting specificity activity and choice of user interface elements in the sense of cultural specificity;

• The type and content of information (cultural-specific parameters);

• The structure and sequence of the elements positioning on the screen, the number and detail of elements in the field of perception (pragmatic specificity);

• Semantic analysis of expressions and professional terminology - instructions, tips, names of system elements and their pragmatic adequateness;

• Techniques of nonverbal coding as icons, signals, colored images;

• Presence of adequate feedback. In other words, general design-typographic aspects of the text, which are the most appropriate for the perception of textual information by the user. All requirements submitted for ergonomic e-resource interface organization can be divided into four main categories:

• Navigation;

• Architectonics and structure of the page;

• Ability of getting feedback, access, updating content, the dominant style of representation of information;

• Color and font decision;

6.4. Practical Analysis and Finding out Correlations between Existing Theoretical Information and Real Websites Appearance: Criterions and Examples

Turning to practice, it is possible to see that the design of user interfaces in different countries demonstrates cultural differences in set of colors, degree of assistance in navigation, information-intensity, extent of its grouping, etc. It is possible to identify a number of the most important parameters for further analysis of websites. The first and foremost are iconic symbols. There will be complexity in matching one-to-one relation between specific concepts and iconic symbols in different cognitive contexts. Accordingly, creation of user-friendly interface de-

signed for multicultural audience requires professionalism in designing iconic signs, because of the need to analyze the subject area and the cultural characteristics of the target audience and determine the composition and features of iconic signs. The second class of problems in iconic is associated with a representation of abstract concepts as objects, expressed by iconic signs or represented in the form of visual metaphors. Depiction of abstract concepts in different cultures, differentiation within the iconic symbols, figural objects, pictograms indicating the nature of performing action, pictograms used as functional analogue and denoting the result of the performed steps should be considered. As it is well known, the basic functions of iconic signs include:

- notation of similarity to a particular object;
- replacement or representation of an object;
- illustrative and communicative function.

According to observations, high-context cultures' websites contain more pictures and less text than sites of low context cultures. However, it is clear enough that the images (signs, icons) may be perceived in quite a different way in different cultures. For example, Arab resources show many national and religious symbols regardless of the topic. National symbols are in a very active use in Japanese resources. Not all of the iconic signs that are easily understandable to representatives of Western cultures can be adequately understood in the cultures of the East. And, accordingly, vice versa. As more as possible neutral symbols should be used to avoid pragmatic inconsistencies when dealing with multicultural audience. As for set of colors, first of all, it is very important to consider the principle of functional, physiological and emotional relevance, and only then the factor of cultural specificity. It can be noted that in most European e-resources used gray and brown hues, while in Asian e-resources dominates hues of red. However, the symbolism of the color can be interpreted ambiguous too.

From the standpoint of navigation parameters menu layout, interface objects used and the place of the text in the site's space are important in the chosen context. For example, Arabic and Israeli text is read from right to left, you can still meet the vertical inscriptions or entire articles in Japanese and Chinese. Parameters of access to pages and information also may have significant importance. In some cultures, users usually must have the permission to see certain information, while in other cultures information is mostly publicly available. In addition, there are differences in the interaction with users: errors and instruc-

tions for navigation can be placed in a rude form, while they may be accompanied by polite comments explaining why something possibly went wrong, and providing instructions on how to fix it. As for the menu, the Russian and Asian e-resources usually have vertical menu, while Western one – horizontal. It is connected to the construction of site, for example, the majority of American resources occupy the entire width of the page, while in the Arab sites there is the "top-down" structure. Specificity of filling the site with content can also be differentiated according to cultural factors. In cultures with a high index of individualism, for example, for most of the web resources the method of open content is used that means users are able to add and edit the information placed, which is not typical for collectivist cultures. E-resources of individualistic cultures are usually characterized by ease of presentation, clarity of metaphors, navigation menu organized to prevent the user from getting lost, etc. Comparing the design of sites of different cultures, it can also be seen that, for example, Asians prefer "pop-ups", which are very rarely seen on the resources of northern Europe. Chinese websites often contain several simultaneous animations, overlays, sliders. This can be explained mostly by the fact that the pop-ups do not appear immediately but after some time. This is unusual for low context Western cultures because of being annoying and distracting for their representatives, and, on the contrary, is positively perceived by Asian users. It has been observed that the representatives of Asian cultures do not like to type text; they prefer to click on the links, so their sites are often overloaded with links, images, and other interface elements, which allow avoiding typing. Such a variety of elements often shocks representatives of low context cultures.

There is one more type of differences between cultures – they pay attention to different objects in the website considering the different types of information to be important. Moreover, according to D. Matsumoto (Matsumoto, 2002), people from various cultural groups may use different strategies for working with information. For example, there is a tendency to make decisions based on the representativity in cultures with high level of such Hofstede's cultural dimension as uncertainty avoidance. This trend is affects user interaction with the interface too. That means that graphical applications in the form of presentations, models, etc. are needed in addition to the text information. Representatives of high context cultures often prefer descriptions to the facts, while the inhabitants of the countries with a high index of uncertainty

avoidance tend to get detailed information. So that variety of sources of information should be offered on the international e-resource: descriptive text, statistics, pictures, videos (ofdifferent styles), etc.

After all, according to research of R. Zaltsman (Zaltsman, 2003), in a present-day cross-cultural information space there is a tendency of transferring Western web culture to the web space of the East, and the eastern web culture largely begins to adapt to the western.

6.5. Working-out Practical Recommendations and Decisions

Focusing on the specificity of the page structure and font decisions, it is interesting to notice the following difference: in English texts the so-called ragged right formatting is used, that means that the text is aligned to the left and the right edge is "torn". Paragraphs of text are separated by vertical indentation. In Russia, a traditional text layout is aligned to the column width and the separation of paragraphs is more commonly known as a "red line".

Developers of interface for multicultural e-resource must take into account the consequences of changing the standard date, time, currency, and other service information to local. For example, in the U.S.A. dates are traditionally displayed in the format YYYY/MM/DD or MM/DD/YYYY, while most European countries adopted representation DD/MM/YYYY. Thus, date format could cause confusion, especially when the number of months is less than 12 (12/04/2012 can mean both 12th of April and 4th of December). There also should be used the encoding and fonts that allow the usage of local currency symbols (£, $, ¥, € and more specific, such as). Using specific characters for different countries can be greatly facilitated by the use of CSS3: previously web designers had to use only the most common fonts, and labels with a rare signs had to be replaced with the image, but now it is possible to load the native fonts for web document. Moreover, for sure, the days when users had to install the fonts themselves to properly use the e-resource are far ago. The use of modern web technologies such as CSS3 and HTML5, offers great opportunities for the practical implementation of the recommendations for the creation of ergonomic culture-oriented design. In the continuation of the study the summary table of relations between numerical Hofstede's metrics and exact ways to present the content as well as the need for a specific user interface elements will be

formed. For cultural groups differentiation, Geert Horstrede's dimensions of national culture were chosen, which are: Power Distance, Individualism versus collectivism, Masculinity versus femininity, Uncertainty avoidance, Long-term versus short-term orientation, Indulgence versus Restraint.

In the part of recommendations for web-based user interface organization, the research refers to educational materials of UC Santa Cruz «HCI Foundations: Individual Differences», which are based on the paper «Globalization of User-Interface Design for the Web», published in 1999 by Aaron Marcus with his co-authors John Hermitage and Walker Frank, and also on its continuation «Cultural Dimensions and Global Web Design: What? So What? Now What?» (Marcus, 2008). Practical recommendations were drown up in accordance with the following web-design characteristics chosen by Marcus, which are influenced by cultural specificity: Metaphors – notable for images used in site design; Mental models – models of thought train from real life, which are stimulated while using the site; Navigation – ways of moving inside the web pages or from one page to another; Interaction is the specifics of interaction between the user and the interface. Appearance is features of the site design, such as color scheme, forms, layout, sounds, video etc.

The major problems in using these data were that Marcus considered only the extreme parameters of Hofstede's dimensions, or, in other words, his recommendations suited only target audiences with extremely high or extremely low parameters of Hofstede's cultural dimensions. Furthermore, these recommendations were formulated when the Internet was only beginning to be used commonly and long before Web 2.0 appeared. For this reason, these recommendations have been noticeably worked over so as to bring them up-to-date. Then, the intermediate parameters of Hofstede's dimensions recommendations have been added.

Among the targets of the research was to test the possibility of distinguishing certain groups within the target audience, which could be offered one interface variant with minimal discomfort while using the interface. To solve this problem, the data were clustered based on the basis of the k-means statistical method. This method is based on splitting the set of vector space elements into a predetermined number of clusters k.

Various divisions into clusters have been used with the number of clusters ≥ 3. We have found out that 3 is the optimal number of clusters

when using the method “Intelligent Choice of the Number of Clusters in K-Means Clustering”, and a bigger number of clusters does not cause the better correspondence between the clusters and the real-life distribution. For instance, there appear borders between clusters at the levels of Hofstede’s dimensions characteristical for many countries. In other words, representatives of many nearly identical groups could see the different variants of the interface, which contradicts the logics. While dividing every Hofstede’s dimension into three clusters, the users see the least differences in their interface (Figure 6.1).

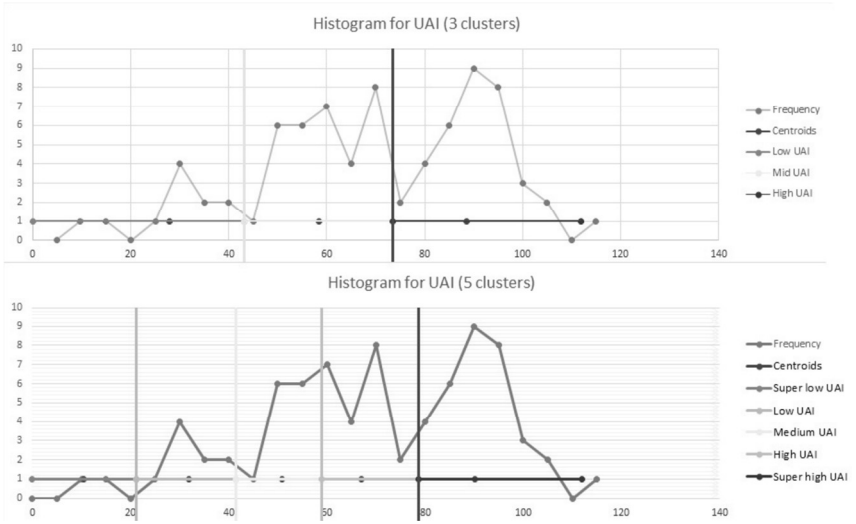

Figure 6.1. Comparing the division into 3 and 5 clusters based on the bar graph “Avoiding indefiniteness

We conducted a survey in the multicultural anonymous online community boards.4chan.org/int/ where we polled 64 representatives of 17 countries in order to find out the specific features of the user interface in their countries. The poll was carried out in the form of delayed communication: a new thread was started in the community asking its users to participate in the poll, and the following questions were placed there, which were worded in informal English: 1. Where are you from? Were you born there? 2. What are the features of websites in your country? (color, text layout, menu structure, the ratio between images and text – whatever you find interesting); 3. Give a few examples of typical websites from your country or commonwealth. Here is the al-

phabetical list of countries whose representatives took part in the poll: Argentina, Canada, England, France, Germany, Holland, Hungary Ireland, Norway, Paraguay, Philippines, Poland, Spain, Sweden, Switzerland, Turkey, USA. It should be mentioned that the poll was carried out in a completely anonymous way, no information about the aims of the poll was provided, no information about the respondents (whether personal data or IP-address) was received and stored.

On the basis of the obtained data for each of the three intermediate levels received through the application of k-means clustering method in each of the six Hofstede's dimensions, practical recommendations have been formulated on the design of the website interface, as well as on the specifics of the interfaces listed above.

For further approbation and verification of the produced recommendations on developing the ergonomic design of culture-sensitive interfaces, an ASP.NET application was developed, which allows to poll various groups on the basis of the produced recommendations and receive feedback on them being true or false.

The application collects the data from the stored recommendation file (for each of the 3 levels of the 6 Hofstede's culture dimensions), and constructs a 6-dimensional hypercube with $36 = 729$ apexes, i.e. sets of recommendations for various culture groups. When learning about the nature of the poll, a respondent may choose their country from the given list, or type the values of the Hofstede's parameters, if a respondent is polled after the testing.

Curve graphs have been drawn, reflecting the growth of dissatisfaction the farther from the cluster centroid the Hofstede's dimension marks are. Also, a hypothesis has been formulated of the necessity of identifying the target group's preferable values of Hofstede dimensions and forming the clusters on their basis in order to reduce the cost of the development, and of the necessity to move clusters against their statistically calculated positions, and to identify the levels of tolerable dissatisfaction, which does not demand changes to the design multicultural Internet communities.(Figure 6.2) The results of these surveys will allow to iteratively adjust the practical recommendations on the development of culture-sensitive interfaces. Besides, this allows to compare the received interface disagreement levels with the real percentage of the negative feedback, which will help verify the formulated hypothesis and allow to rely on the received data and deem them verified.

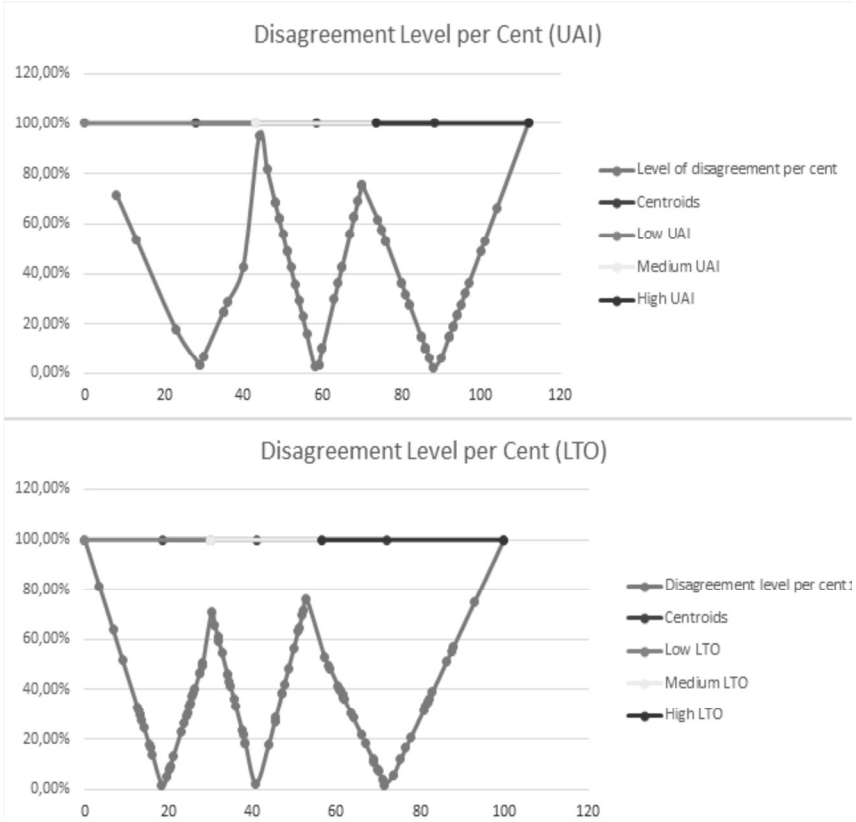

Figure 6.2. Percentage ratio between the value of Hofstede's dimension marks distance to the cluster's centroid and distance form the cluster's centroid to the farther border of the cluster; two Hofstede's dimensions are illustrated

Thus, it can be said without prejudice that that the practical principles of ergonomic design of e-resources should be supported by approaches, developed in the field of semiotics, cultural studies, psychology, which identify rules of combination of the text, images, semantics, fonts, ways of emphasizing text components and its perception. Moreover, one of the important components that need to be considered is specific ways of context perception in different cultures and socio-cultural approach to the creation of e-resources' design, as well as specific of acting and work with information. This research will be the beginning

of series of works devoted to the analysis of conformity of cultural specificity of target audience and the design features needed to ensure maximum comfort and ease of web user interface designed for this audience. The end result of the entire work will be the develop Hofstede's dimensions of estimating national identity are not precise and accurate enough; furthermore, they cannot be applied to identifying groups within the target audience of a website oriented for one country. Thus, the necessity to develop a range of tests, which will provide a more precise differentiation into culture groups according to Hofstede's dimensions. As mentioned before, the evaluation can be made only by one or two Hofstede's parameters which are found essential for a certain situation (depending on the specifics of the company's activities and the target audience). Methods of finding such parameters are yet to be developed and verified. The achieved results can be of use not only for web design firms and usability analysts, but for any company involved in e-commerce whose target group can be split into several culture groups, as well as for lecturers reading a course in Cross-cultural communication and Ergonomic user interface design. The achieved results deemed relevant, as it is essential nowadays when designing a site to take into account the cultural parameters of the target group. One of the reasons for this is a rapidly growing number of cross-border purchased (in Russia e-commerce grew 50% in 2012). ent of software environment that facilitates the development of sensitive to the culture interfaces.

Besides, now many companies have already come to understand the concept of Design Ladder, describing 4 stages of company's maturity in the issues of usability and design: from "no design" when the preferences of the end user are not taken into account, to "design as strategy" when developing and updating the design becomes part of the company's aims and plays an important part at every stage of development. An important positive effect of applying the achieved results is that the given research will allow to clean up the conversion funnel of the buyer's carts abandoned due to disagreeable interface. For further understanding the positive effect, one must bear in mind the following fact: in June 2012 ComScore polled 3000 American on-line buyers and found out that 57% of users do not complete the purchase as they visit the site only to see the goods, compare the prices, read the reviews. These people initially do not plan to purchase anything, however they are also very important as they show their interest for certain goods.

6.6. Design philosophy of educational web-resources for a multicultural audience

Based on the analysis of parametric theory of G. Hofstede in the context of the educational process, research of A. Marcus, and the theory of cognitive styles of R. Nisbett (Nisbett, 2003), theoretical guidelines to manage the structure and design of cultural and adaptive Web User Interfaces have been developed. Here are some of them.

The following criteria are specific for the indicator **"Individualism – Collectivism"**:

- **Metaphoras:**
  - *Individualism:* focuses on actions, instruments, objectives;
  - *Collectivism:* focuses on connections, relations between the objects, content;
- **Mental models:**
  - *Individualism:* focuses on product, objective; targeting to implementation and maximization of personal goals and achievements;
  - *Collectivism:* focuses on the role, duty; models directed to socio-political and cultural goals and underestimating the significance of personal achievements;
- **Navigation system:**
  - *Individualism:* global (overall) and a customized navigation system; individual areas (popular elections, elections of famous people); the system remains unchanged regardless of the user's role; the ability to customize some functions;
  - *Collectivism:* contextual navigation system; general and official elections focused on groups of people; the systems vary based on the user role;
- **Interaction:**
  - *Individualism:* keyword search; focuses on active measures; possibility of using several devices; user-customized system.
  - *Collectivism:* limited interaction; officially adopted devices are available; management depends on the user role;

– **Visual component:**
  - *Individualism:* emphasis on personal success, benefit, objectives and purposes; success is expressed through materialism and consumerism; image of the younger generation, individuals, and active actions; the content is focused on personal achievements, new and unique products and concepts; expression of personal opinion of the users is welcome, discussions are encouraged; generally, users are not required to provide personal information; low context; active dynamic speech; direct access to the user as an individual;
  - *Collectivism:* emphasis on institutional success, objectives and relationships; success is expressed through representation of social and political programs; images of adult and experienced leaders and groups of people are presented; the content highlights group achievements, history and cultural traditions, contains official slogans and elections; expression of a personal opinion is not encouraged; high context; official terminology; formal style of speech; appeal to the user as a part of society, pronounced unity with others.

For all other Hofstede model parameters, conformity expressed in the influence of cultural indicators on the specifics of user interaction with an Internet resource can be also traced.

CONCLUSION

Day by day there are more and more teachers (tutors) who personally experience the complexity of forming a structural educational process in the cross-cultural environment. In these guidelines we merely in general terms specified key styles according to which the cross-cultural didactics should be developed in a consistent manner. As we had previously stated on a number of occasions under conditions of active cooperation of differentiated national cultures structure and semiotics of the educational system of each of them is under the influence of two opposite vectors of development. On the one hand structure and semiotics of any educational system is inevitably determined using specific social and cultural factors. On the other hand every national educational system undergoes the influence of processes of world cultural integration and also demands of the society in the new post-industrial formation.

In the fully developed cross-cultural (polycultural) educational environment it is necessary for methodologists and teachers (tutors) to take into consideration of such factors as: different from each other «cultural world views» of different nations; non-identical educational models in different countries with different objectives of training and values; and as the result – differentiated ways of framing of educational information and different dominating methods of training. To take into account factors specified above and some other factors when developing and implementation of educational programs is possible only for an expert in education with developed cross-cultural competence. To raise the level of cross-cultural competence the teacher (tutor) can work with the education in the sphere of cross-cultural communication, undergo training, different adaptation simulators and etc. It is obvious that the competence of teachers and tutors should be hinged on the following parameters: differences in cognitive images of the world; differentiated strategies of work with information; specifics of educational communication (discourse and methodological features); types of educational content and etc. It is necessary to take into account the fact that the culturological aspect in pedagogical activity of the teacher becomes more important because of the co-existence of different national educational systems and their products in international academic environment.

Essentially developed cultural intelligence is the very component of the individual which gives the opportunity to quickly adapt to conditions of polycultural entropy. There is no point to note once again that

for tutors working in the polycultural environment development of cultural intelligence is an obligatory trait of the professional individual. To develop cultural intelligence the series of methods can be used. One of them is obviously a cultural assimilator.

Developed cultural intelligence will give an opportunity to determine the cultural and cognitive profile of individual and to select for the trainee right educational pathway with adequate methods and educational content.

This publication will give necessary minimum of theoretical and practice-oriented material allowing to every teacher to create and develop the structural educational strategy. Let's repeat that information about classification of educational systems, objectives, values in each of them, specifics of cognitive activity in different cultural groups, differentiated styles of education in different cultures and especially features, methods and materials in different educational systems. It is obvious that models of pedagogical discourse will be also not invariable. Separate chapter deals with specifics of polycultural educational communication using electronic educational resources of different cultures.

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ABBRIVIATIONS

IEE – informational educational environment
CRIT – cultural and relevant intelligence of the teacher
MOOC – massive opening online courses
ICT – information and communication technologies
LMS – learning management systems
EEE – electronic educational environment
ISP – Individual Study Pathway
VLE – Virtual Learning Environment

APPENDIX

Appendix 1. Glossary

Acculturation – culture change resulting from contact between cultures. A process of external culture change [http://oregonstate.edu/ instruct /anth370/gloss.html].

Acculturation explains the process of cultural change and psychological change that results following meeting between cultures.

Assimilation – when one ethnic group absorbs another, so that the cultural traits of the assimilated group become indistinguishable [http://oregonstate.edu/instruct/anth370/gloss.html].

Cultural differences in perception, or the process by which people become aware of their environment (Weiner, Healy, & Proctor, 2003), emerge in the ways Westerners or Easterners perceive the self- versus others alongside other key areas of perception (Simonson, Carmon, Dhar, & Drolet, 2001) such as the perception of emotions, the environment and sensory perceptions.

Culture shapes the way people perceive their self and others, as well as the relationship between the two (Markus & Kitayama, 1991; Triandis, 1989). People in Western cultures hold a dominant independent self-construal, which "involves a conception of the self as an autonomous, independent person" (Markus & Kitayama, 1991, p. 226). Conversely, people in Eastern cultures possess a dominant interdependent self-construal and perceive the individual "not as separate from the social context but as more connected and less differentiated from others" (Markus & Kitayama, 1991, p. 227). [Kastanakis, M. and Voyer, Benjamin G. (2014) The effect of culture on perception and cognition: a conceptual framework]

Intercultural dialogue is a path to conviviality and multiculturalism in which cultures influence each other without destroying themselves or entering into clashes or conflicts [Aviva Doron "Towards a definition of intercultural dialogue"].

Didactics is a theory of teaching, and in a wider sense, a theory and practical application of teaching and learning. In demarcation from

«mathetics» (the science of learning), didactics refers only to the science of teaching.

A **didactic task** is the design of technology-based teaching and learning environments, which aimed to ask two questions: What to teach - selecting, analyzing, and modeling the curricular content; and how to teach - that is, specifying the pattern of method and media interactions, including a psycho-pedagogical view of the learner and the learn processes [Vosniadou, Stella, Corte, Erik de, Mandl, Heinz (Eds.) "Technology-Based Learning Environments. Psychological and Educational Foundations"].

Knowledge$_1$ – understanding of or information about a subject that you get by experience or study, either known by one person or by people generally [http://dictionary.cambridge.org/dictonary/English/knowledge].

Knowledge$_2$ – facts, information, and skills acquired through experience or education; the theoretical or practical understanding of a subject [http://www.oxforddictionaries.com/definition/English/knowledge]

Knowledge$_3$ is the result of human development and the ensemble of intellectual activities that has been made publicly available in whatever form [http://wealthofthecommons.org/essay/knowledge-water-mind-how-structure-rights]

Knowledge$_4$ is a familiarity, awareness or understanding of someone or something, such as facts, information, descriptions, or skills, which is acquired through experience or education by perceiving, discovering, or learning.

The individual educational trajectory (IET) is a medium-term didactic complex that provides optimal opportunities for developing the creative potential of the learner by taking into account his/her personality. It includes: 1) developing an individual informational environment; 2) tuning the didactical resources; 3) personalization of the interim goals; 4) planning personal learning and research activities; 5) considering the selforganization [Borislav Lazarov "Application of some cybernetic models in building individual educational trajectory].

Educational trajectory is the path of an individual learner through one or more programs of study and includes a sequence of formal curricular activities and events, informal professional development activities and events, and breaks in matriculation. Educational trajectory is likely to be different for every learner. [http://www.medbiq.org/ working_groups/educational_trajectory/index.html].

Individual educational route (IER) is a structured program of student's activities at a fixed stage of training, aimed at the development of his individual abilities. The latter can be implemented in several educational routes that are implemented simultaneously, or sequentially [http://psyjournals.ru/en/ psyedu/ 2013/n4/ 66344.shtml].

Learning pathways are defined as the result of educational experiences or events and educational pathways as the result of educational situations that occur within the framework of formal training and the school system [Pierre Doray, France Picard, Claude Trottier, Amelie Groleau "Educational Pathways: Some Key Concepts"].

Interiorization$_1$ (from Latin "interior") literally means the transition from without to within. In psychological usage, it is a term that refers to the formation of stable structural – functional units of consciousness through the mastery of external actions with objects and the mastery of external sign means (e.g., the formation of inner speech from external speech). Sometimes it is interpreted more broadly as any mastery of information, knowledge, roles, and attitudes. In the theory, Vygotsky wrote primarily about the formation of the inner means of mental activity out of the external means of communication in joint activity. In other words, Vygotsky used the concept of interiorization to refer to the formation of the "systemic" structure of consciousness (as opposed to the "meaning" structure). However, interiorization does not by itself constitute the formation of HMF (higher mental functions) (because spontaneous functions are also the result of interiorization). For that, intellectualization is needed [Harry Daniels,James V. Wertsch "The Cambridge Companion to Vygotsky"].

Internalization$_2$ (or internalisation) is the process of consolidating and embedding one's own beliefs, attitudes, and values when it comes to moral behavior. The accomplishment of this may involve the deliberate use of psychoanalytical or behavioral methods.

Internalization of norms might take place following religious conversion, or in the process of the more general moral conversion of the person. Internalization is also often associated with learning (for example, learning ideas or skills) and making use of what has been learned from then on.

In sciences such as psychology and sociology, internalization involves the integration of attitudes, values, standards and the opinions of others into one's own identity or sense of self. In psychoanalytic theory, internalization is a process involving the formation of the super ego.

As human beings, we live in societies that create their own systems of meanings through the process known as culture. This system of meanings is encoded in language and other symbols and maintained by a set of institutions over time (Serpell, 1994).

Cultural conceptualization of intelligence

In recent years, researchers have found that people in Eastern and Western cultures often have fundamentally different ideas about intelligence. Richard Nisbett, in The Geography of Thought, argues that these differences are due to the different cognitive styles of both cultures, including how intelligence is understood. He suggests that people in Western countries tend to view intelligence as a means for individuals to devise categories and to engage in rational debate, while people in Eastern cultures see it as a way for members of community to recognize contradiction and complexity and to play their social roles successfully.

Nisbett says these differences between Eastern and Western views of intelligence are related to differences in the basic cognitive processes of people in those cultures. In most cases, Western notions of intelligence are not shared by other cultures. For example, at the mental level, the Western emphasis on speed of mental processing (Sternberg, 1981) is not shared by many cultures. In contrast, people in Eastern countries may even be suspicious of the quality of work done very quickly and emphasize depth rather than speed.

Similarly, Chen (1994) found three factors underlying Chinese conceptualizations of intelligence: nonverbal reasoning ability, verbal reasoning ability and memory. These factors differ substantially from American people's conceptualizations of intelligence which have mostly mental attributions, such as: practical problem solving, verbal ability and social competence (Sternberg, 1981) [http://www. fountain-

magazine.com/ Issue/detail/The-Construction- of-Intelligence-in-Terms-of-Cultural-Differences-between-East-and-West].

Information is that from which data and knowledge can be derived, as data represents values attributed to parameters, and knowledge signifies understanding of real things or abstract concepts. As it regards data, the information's existence is not necessarily coupled to an observer (it exists beyond an event horizon, for example), while in the case of knowledge, the information requires a cognitive observer.

At its most fundamental, information is any propagation of cause and effect within a system. Information is conveyed either as the content of a message or through direct or indirect observation of something. That which is perceived can be construed as a message in its own right, and in that sense, information is always conveyed as the content of a message. [https://en.wikipedia.org/wiki/Information].

Intercultural communication is a form of communication that aims to share information across different cultures and social groups. It is used to describe the wide range of communication processes and problems that naturally appear within an organization or social context made up of individuals from different religious, social, ethnic, and educational backgrounds [https://en.wikipedia.org/wiki/Intercultural_communication].

Cross-cultural communication is a field of study that looks at how people from differing cultural backgrounds communicate, in similar and different ways among themselves, and how they endeavour to communicate across cultures.

Competence$_1$ is the ability of an individual to do a job properly. A competency is a set of defined behaviors that provide a structured guide enabling the identification, evaluation and development of the behaviors in individual employees. The term «competence» first appeared in an article authored by R.W. White in 1959 as a concept for performance motivation. Later, in 1970, Craig C. Lundberg defined the concept in «Planning the Executive Development Program». The term gained traction when in 1973, David McClelland wrote a seminal paper entitled, «Testing for Competence Rather Than for Intelligence». It has since been popularized by one-time fellow McBer & Company (Cur-

rently the «Hay Group») colleague Richard Boyatzis and many others, such as T.F. Gilbert (1978) who used the concept in relationship to performance improvement. Its use varies widely, which leads to considerable misunderstanding. This is all the more true, that competence appeared in varied countries and varied scientific contexts, with different meanings (Klarsfeld, 2000) [https://en.wikipedia. org/ wiki/ Competence_ (human_resources)].

Competence$_2$ is the ability to do something successfully or efficiently [http://www.oxforddictionaries.com/ definition/english/ competence].

Multicultural competence is defined as the ability to understand and constructively relate to the uniqueness of each individual in light of the diverse cultures. To achieve this competence, it is necessary to avoid stereotypes and identify the multiple cultural influences that often operate unconsciously in the mixed identities of most individuals. [R.B. Stuart "Twelve Practical Suggestions for Achieving Multicultural Competence].

Cross-cultural competence refers to the knowledge, skills, and affect/motivation that enable individuals to adapt effectively in cross-cultural environments. Cross-cultural competence is defined here as an individual capability that contributes to intercultural effectiveness regardless of the particular intersection of cultures. [https://en.wikipedia. org/ wiki/ Cross-cultural_competence]

Cross-cultural psychology is the scientific study of human behavior and mental process, including both their variability and invariance, under diverse cultural conditions. [Ho & Wu, 2001, p. 4].

Culture is the collective programming of the mind that distinguishes the members of one group or category of people from others». It is always a collective phenomenon, but it can be connected to different collectives. Within each collective there is a variety of individuals. If characteristics of individuals are imagined as varying according to some bell curve; the variation between cultures is the shift of the bell curve when one moves from one society to the other. Most commonly the term culture is used for tribes or ethnic groups (in anthropology), for nations (in political science, sociology and management), and for

organizations (in sociology and management). However, changing the level of aggregation studied changes the nature of the concept of 'culture'. Societal, national and gender cultures, which children acquire from their earliest youth onwards, are much deeper rooted in the human mind than occupational cultures acquired at school, or than organizational cultures acquired on the job. The latter are exchangeable when people take a new job. Societal cultures reside in (often unconscious) values, in the sense of broad tendencies to prefer certain states of affairs over others (Hofstede, 2001, p. 5) [G. Hofstede "Dimensionalizing Cultures- The Hofstede Model in Context"].

A **cultural syndrome** is a shared pattern of attitudes, beliefs, categoriazations, self-definitions, norms, role definitions, values, and other subjective elements of culture that is organized around some theme; it can be found among those who speak a language dialect, in a certain historic period, and in a definable geographic region [Ed Diener and Eunkook M. Suh "Culture and Subjective Well-Being"] [H. C. Triandis "The Psychological Measurement of Cultural Syndromes"].

A cultural syndromes consist of shared attitudes, beliefs, norms, and values found among those who speak a particular language dialect, in a specific geographic region, during a particular historic period. The shared elements of subjective culture are organized around a theme, such as complexity, or the importance of the collective. Cultural syndromes provide a focus, so that we can get out of the fuzzy construct of «culture» and into a construct that we can probe systematically [http://www.wwu. edu/ culture/ triandis2.htm].

Cultural Intelligence$_1$ (CQ) is a person's capability to function effectively in situations characterized by cultural diversity (Ang, Van Dyne, & Koh, 2005; Earley & Ang, 2003; Earley & Mosakowski, 2005). Knowledge of your Cultural Intelligence provides insights about your capabilities to cope with multi-cultural situations, engage in cross-cultural interactions appropriately, and perform effectively in culturally diverse work groups. Knowledge of the Cultural Intelligence of others provides insights about how best to interact with others in multi-cultural situations, engage in cross-cultural interactions appropriately, and perform effectively in culturally diverse work groups.

Contemporary conceptualizations of intelligence recognize that intelligence is more than cognitive ability (Sternberg & Detterman, 1986).

For example, research recognizes the importance of interpersonal intelligence, emotional intelligence, and social intelligence. Like these other forms of intelligence, CQ complements IQ (cognitive intelligence) by focusing on specific capabilities that are important for high quality personal relationships and effectiveness in culturally diverse settings [http://www.linnvandyne.com/cq.html].

Cultural Intelligence$_2$ (CQ) is a term used in business, education, government and academic research. Cultural intelligence can be understood as the capability to relate and work effectively across cultures. Originally, the term cultural intelligence and the abbreviation «CQ» was developed by the research done by Soon Ang and Linn Van Dyne as a researched-based way of measuring and predicting intercultural performance.

According to Earley, Ang, and Van Dyne, cultural intelligence can be defined as «a person's capability to adapt as s/he interacts with others from different cultural regions», and has behavioral, motivational, and metacognitive aspects.

Cultural intelligence or CQ is measured on a scale, similar to that used to measure an individual's intelligence quotient. People with higher CQ's are regarded as better able to successfully blend into any environment than those with a lower CQ. CQ is assessed using the academically validated assessment created by Linn Van Dyne and Soon Ang [https://en.wikipedia.org/wiki/ Cultural_intelligence].

Culture Assimilators$_1$ are culture training programs first developed at the University of Illinois in the 1960s [https://en.wikipedia.org/wiki/ Culture_assimilators_(programs))].

The construction of self-administered programmed culture training manuals, called **Culture Assimilators**. These programs provide an apparently effective method for assisting members of one culture to interact and adjust successfully with members of another culture.

The Culture Assimilator$_2$ is a programmed learning experience designed to expose members of one culture to some of the basic concepts, attitudes, role perceptions, customs, and values of another culture [F. E. Fielder, T. R. Mitchell and H. C. Triandis “The culture assimilator: an approach to cross-cultural training].

A **mentality$_1$** is a way of thinking or the ability to think and learn.

An obvious part of the noun mentality is the word «mental» which means «of the mind». How your mind works is your mentality, either in a way you think about things. A learned way of thinking comes from experiences [https://www. vocabulary.com/dictionary/mentality].

A **mentality$_2$** is a habitual or characteristic mental attitude that determines how you will interpret and respond to situations [https://www. vocabulary.com/dictionary/ mentality].

A **mentality$_3$** is the characteristic way of thinking of a person or group
[http://www.oxforddictionaries.com/definition/english/mentality].

Lasswell's communication model was developed by communication theorist Harold D. Lasswell in 1948. Lasswell's model of communication (also known as action model or linear model or one way model of communication) is regarded as one the most influential communication models.

Lasswell's communication model has 5 components which is used as an analysis tool for evaluating the communication process and components.

Components	Meaning	Analysis
Who	the communicator or sender or source of message	Control Analysis
Says What	the content of the message	Content Analysis
In Which channel	the medium or media	Media Analysis
To Whom	the receiver of the message or an audience	Audience Analysis
With What Effect	the feedback of the receiver to the sender	Effect Analysis

Explanation of different Components of Lasswell's Model:

- Control analysis helps the sender to have all the power.
- Content analysis is associated to stereotyping and representation of different groups politically. It is also related to the purpose or the ulterior motives of the message.
- Media analysis represents which medium should be used to exercise maximum power against the receivers.

- Audience analysis shows who are the target population to be manipulated.
- Effect analysis is done before the process starts. It is used to predict the effect of message over the target population to be exploited.

Though Lasswell's model was developed to analyze mass communication, this model is used for interpersonal communication or group communication to be disseminated message to various groups in various situations [http://www.businesstopia.net/ communication/ lasswell-communication-model].

The term **"learning space"** highlights the mutually supporting ways in which learning as an activity and space as an environment construct and modify each other. Space mediates our thinking and is a vehicle for our objectified thoughts; it both shapes and is shaped by practice. Learning space is the product of design processes that rely on assumptions of relationships between forms of space and practices of learning. The 'space' component is intended to refer to physical space, although its meaning has been extended to include virtual and conceptual space [http://www.tel-thesaurus.net/wiki/ index.php/Learning_space].

The educational or learning environment$_1$ can be defined in various ways. At its simplest it can mean the physical surroundings within which learning takes place, such as access to library facilities, seminar rooms or simulation equipment. However, references to the environment generally also encompass broader and less tangible notions of educational 'climate', 'culture' or 'ethos'. The American Medical Association (AMA) defines the learning environment as: 'a social system that includes the learner (including the external relationships and other factors affecting the learner), the individuals with whom the learner interacts, the setting(s) and purpose(s) of the interaction, and the formal and informal rules/policies/norms governing the interaction [R. Marchant "Approving Educational Environments"].

Learning environment$_2$ refers to the diverse physical locations, contexts, and cultures in which students learn. Since students may learn in a wide variety of settings, such as outside-of-school locations and outdoor environments, the term is often used as a more accurate or pre-

ferred alternative to classroom, which has more limited and traditional connotations–a room with rows of desks and a chalkboard, for example.

The term also encompasses the culture of a school or class–its presiding ethos and characteristics, including how individuals interact with and treat one another–as well as the ways in which teachers may organize an educational setting to facilitate learning [http://opentextbc.ca/teachinginadigitalage/chapter/5-2-what-is-a-learning-environment/] [http://edglossary. org/ learning-environment/].

Education is the process of facilitating learning, or the acquisition of knowledge, skills, values, beliefs, and habits. Educational methods include storytelling, discussion, teaching, training, and directed research. Education can take place in formal or informal settings and any experience that has a formative effect on the way one thinks, feels, or acts may be considered educational [https://en.wikipedia. org/ wiki/ Education].

A definition of **cross-cultural education** is that it involves a mixture of cultures in which a student is made aware of his or her own and other cultures that comprise his or her education. This approach involves experiential education.

Experiential education is one of the major approaches to cross-cultural education that provides actual experiences of visiting or living in a culture other than one's own and gaining educational experiences and knowledge through personal experiences. One of the popular examples of an experiential approach is the study abroad program. Through either short-term or long-term study abroad programs, students who participate are expected to develop a renewed sense of respect, appreciation, and apprehension about their host cultures that goes beyond acquisition of factual knowledge. Another popular example of cross-cultural education can be seen in migrant education and English as a second language education.

Intercultural education[1] promotes the understanding of different people and cultures. It includes teaching that accept and respect the normality of diversity in all areas of life. It makes every effort to sensitize the learner to the notion that we have naturally developed in different ways. It seeks to explore, examine and challenge all forms of

"isms" and xenophobia, while promoting equal opportunity for all. Intercultural education works to transform not only the individual but the institution as a metaphor and mechanism for the transformation of society [http://ien.inclusion.msu.edu/node/130].

Intercultural education$_2$ is often assumed to lead to more tolerance towards other cultures. It may also entail an acculturation process that will lead to more cultural homogeneity [Niels G. Noorderhaven & Loek C. J. M. Halman "Does Intercultural Education Lead to More Cultural Homogeneity and Tolerance?"].

The Universal Declaration of Human Rights (1948) is one of the fundamental and key international standard-setting instruments for managing relationships between people in societies. It assigns two basic functions to education that also are essential to the concept of **Intercultural Education**$_3$: it stipulates that education "shall be directed to the full development of the human personality and to the strengthening of respect for human rights and fundamental freedoms", and that it "shall promote understanding, tolerance and friendship among all nations, racial or religious groups, and shall further the activities of the United Nations for the maintenance of peace".

Multicultural education refers to any form of education or teaching that incorporates the histories, texts, values, beliefs, and perspectives of people from different cultural backgrounds.

Generally speaking, multicultural education is predicated on the principle of educational equity for all students, regardless of culture, and it strives to remove barriers to educational opportunities and success for students from different cultural backgrounds [http://edglossary.org/ multicultural-education/].

Polycultural education is a process of studying by the younger generation of ethnic, national and world culture aiming the spiritual enrichment, the development of globalization and global consciousness, the formation of readiness and ability to live in a multicultural polyethnic medium presented by the system of cultural values, differing from the own ones. The perspectives of upbringing of personal qualities of a culture man, a citizen of the world, are connected with the polycultural education [M. Absatova, T. Nurpeisova, D. Tektibayeva and L. Mamytbekova "Scientific-Theoretical Basis of Polycultural Education Development in Polyethnic Medium].

Learning styles[1] are different ways that a person can learn. It's commonly believed that most people favor some particular method of interacting with, taking in, and processing stimuli or information.

Learning style is the manner in which a learner perceives, interacts with, and responds to the learning environment. Components of learning style are the cognitive, affective and physiological elements, all of which may be strongly influenced by a person's cultural background.

Learning styles can be defined as a set of cognitive, emotional, characteristic and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment (Keefe, 1979) [http://edutechwiki. unige.ch/en/Learning_style].

The term **"learning styles"**[2] speaks to the understanding that every student learns differently. Technically, an individual's learning style refers to the preferential way in which the student absorbs, processes, comprehends and retains information. Individual learning styles depend on cognitive, emotional and environmental factors, as well as one's prior experience. It is important for educators to understand the differences in their students' learning styles, so that they can implement best practice strategies into their daily activities, curriculum and assessments [http://teach.com/ what/teachers-teach/learning-styles].

According to Bennet's (1996) definition, "A **learning style**[3] is a particular way that an individual receives and processes information." Another definition is cited from the paper "knowing and learning" in a book called Interpreting Cultural Differences (Mclaren, 1998: 158), "**Learning style**[4] is the way in which human beings concentrate on, absorb, process and retain new and difficult information." What's more, most people learn in a variety of ways. The most common ways for any individual will depend on the culture [Hong Jian "A Contrastive Study of Cultural Diversity of Learning Styles between China and the United States"].

"A **learning style**[5] is a student's consistent way of responding to and using stimuli in the context of learning. The composite of characteristic cognitive, affective, and physiological factors that serve as relatively stable indicators of how a learner perceives, interacts with, and responds to the learning environment. Those educational conditions under which a student is most likely to learn." ["Learning styles & preferences," 2000, para. 1].

Comparative education is a fully established academic field of study that examines education in one country (or group of countries) by using data and insights drawn from the practises and situation in another country, or countries. Programs and courses in comparative education are offered in many universities throughout the world, and relevant studies are regularly published in scholarly journals. [https://en.wikipedia. org/wiki/Comparative_education].

Comparative pedagogy reveals, alongside each country's unique mix of values, ideas and practices, powerful continuities in these which transcend time and space. In so doing, it helps us to pinpoint those universals in teaching and learning to which, in any context, we need most closely to attend if we are to improve the quality of education [http://www.jstor.org/stable/3099559?seq=1#page_scan_tab_ contents].

Cultural learning styles are those learning styles of an individual that are the product of his or her cultural background and upbringing [http://library.educationworld.net/a12/a12-166.html].

Cross-cultural learning styles refer to variations in the cognitive, affective, and physiological traits that are relatively stable, self-consistent, and characteristic indicators of how learners from different cultures perceive, interact with, and respond to the learning environment, including, but not limited to, the processing of information. In a more applied manner, cross-cultural learning styles can also be referred to as the degree to which the concept that individuals differ in regard to what mode of instruction or study is most effective for them varies across cultures [Norbert M. Seel "Encyclopedia of the Sciences of Learning"].

Smart Education «SMART»[1] is used as an acronym that refers to interactive technology that offers a more flexible and tailored approach to meet diverse individual requirements by being "Sensitive, Manageable, Adaptable, Responsive and Timely" to educators' pedagogical strategies and learners' educational and social needs' [http://www.emeraldgrouppublishing. com/ products /journals/ journals.htm?id=itse].

SMART education$_2$ is a creativity focused, customized system for developing new ways to learn by using up-to-date technology like cloud computing, and enables students to study with various materials based on their aptitudes and intellectual levels using mobile Digital Textbook at anytime, anywhere and on any devices [Sanghyun Jang "Study on Service Models of Digital Textbooks in Cloud Computing Environment for SMART Education"].

Ethno-pedagogy$_1$ is a science about life experience of people, about upbringing and education of children, ethical and environmental standards and rules of behaviour of the younger generation in natural and social environment. People are unique and inexhaustible source of spiritual values. Since the time immemorial a distinctive moral way of spiritual culture has been developed by people (Volkof G.N. Etnopedagogika's wolves. 1999. 168 p.).

Ethno-pedagogy$_2$, as defined by Henry Burger, is the "activity of cross-cultural teaching." The goal of ethno-pedagogy is the attainment of syncretism, or the "reconciliation of two or more cultural systems or elements with the modification of both." Further, the author refers to cross-cultural teaching as "applied educational ethnology," maintaining that it can be considered a "subdiscipline" of anthropology.

In the definition of Gennady Volkov **ethno-pedagogy$_3$** is presented as a science, which studies a traditional practice of education and training that is historically rooted in different ethnic groups (Volkov G. N. Ethnoprdagogy, 1974).

Ethnomathematics$_1$ – mathematical concepts and activities as existing in various cultural groups (especially non-literate ones); the study of this [http://www.oxforddictionaries.com/definition/english/ethnomathematics].

Ethnomathematics$_2$ – in mathematics education, ethno-mathematics is the study of the relationship between mathematics and culture. Often associated with «cultures without written expression», it may also be defined as «the mathematics which is practiced among identifiable cultural groups». It refers to a broad cluster of ideas ranging from distinct numerical and mathematical systems to multicultural mathematics education. The goal of ethno-mathematics is to contribute both to the understanding of culture and the understanding of mathematics, and mainly to lead to an appreciation of the connections between the two [https://en.wikipedia. org/ wiki/Ethnomathematics].

Appendix 2. Basic parameters of cultural-cognitive personality profile design

	Cognitive Style	Reflexive	Blended	Impulsive
Cognitive parame-ters	Specifics of working with information	Attention to context: Hi informaton structure; trees Type of thinking; holistic	Information structure: blocks with a surface bond	Attention to context: Low informaton structure: systematically organized by atomic units Type of thinking: analytical
	Attention specifics	Attention to «a frame»	Attention to objects into a frame. Frame plays linkage function	Attention to objects
	Decision-making specifics	Orientation to the authorinative opinion, the inclusion of others in the decision-making process, uncertainty avoidance	Orientation to the free choice of a permitted framework of society	Orientation to their own opinion, loyality to the uncertainty
	Creativity specifics	Interpretation within the existing tradition	Creating a new, more advanced in framework of tradition	Innovativeness
Contextu-al parame-ters	Discourse specifics	Unity witn collective, maintaining harmony	Variability	Expression of individuality
	Relation to the rules	Universalism	Variability	Particularism
	Relation to code of conduct	Closeness	Variability	Openness

Activity-related parameters	Specifics of activity	Reactive	Polyactive	Monoactive
	Relation to time	Time-nonlinear value (Cyclical)	Understanding the limitations of time as a resource. Cost of time: Low	Time-linear value. Cost of time: High
	Attitude to society	Type of culture: collectivist. Power distance: high	Type of culture: hierarchical structure. Power distance: average	Type of culture: individualism. Power distance: low
	Status specifics	Significance of the origin	Depends on the situation	Significance of personal achievement
	Specifics of communication	Attention to context: high. Style of communication: branched argument. Reasoning deduction Genre: narrative	Attention to context: average. Style of communication mixed. Reasoning influtive Genre: mixed	Attention to context: low. Style of communication: cognitive, linear reasoning based on facts. Reasoning: induction Genre: discussions and debates

Appendix 3. Table of interrelations of the cultural type and methods of educational models building

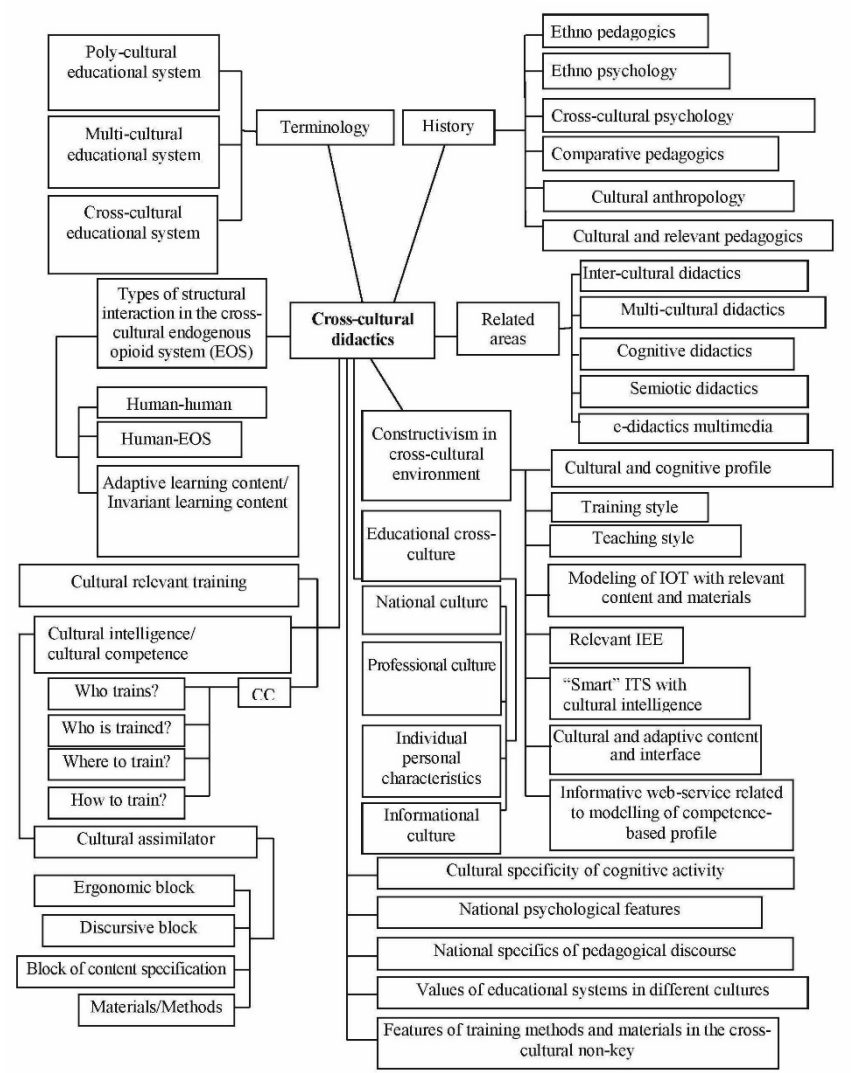
Country	Educational style	Cognitive characteristics	Operational characteristics	Specific nature of educational communication	Tutorship model	Multimedia technologies
The USA	convergent / assimilative	low context, monochromic, linear time, analytical thinking, attention to objects, impulsive, people around are the source of satisfaction of needs	linear-active, short power distance, individualism, slight uncertainty avoidance, professional competences and achievements are important	Stimulation of attention, uniting of the student's interest with the tutor's interest via mutual study of the subject methods: Question inquiry analysis	objective – Moral education, development of professional competences principles - Freedom, consciousness, activity, individualization function - Pedagogical, educational Home education, family education, consultation, monitorial education, coach, tutor is a person of the same age, individual tutor	symbolic objects (signs, symbols, graphs, charts) graphic object (photo) video objects (animations, dynamical models of events and processes, video plots) environment of «virtual reality» (simulators, construction sets, exerciser, interactive models, virtual laboratories)
Central Europe	assimilative	low context, monochromic, linear time, ana-	linear-active, short power distance, individual-	Stimulation of attention, mutual studying of the subject, satis-	objective – Moral education, development of professional	symbolic objects (texts, graphs, charts, tables,

Country	Educationa style	Cognitive characteristics	Operational characteristics	Specific nature of educational communication	Tutorship model	Multimedia technologies
		lytical thinking, attention to objects, impulsive, people around are the source of satisfaction of needs	ism, slight uncertainty avoidance, professional competences and achievements are important	faction of individual needs, development of senses, good habits, drawing up of the individual educational plan, observation of the development methodsы: Question inquiry analysis problem method motivation stimulation Socratic dialog, gaming	competences, development of intercognitive skills principles - Freedom, consciousness, activity, individualization function - Pedagogical, educational monitorial education, coach, tutor is a person of the same age, individual tutor, mentor, professional tutor, consultation	diagrams) audio information (oral educational texts, audio plots, audio dialogs, educational commentaries to virtual objects, audio chronic) graphic objects (photo, images, pictures)
Southeas Asia	assimilative / convergent	high context, polychromic attitude towards time, holistic thinking, reflexive style, striving to live in harmony with environment	multi-active, reactive, long power distance, collectivism, strong uncertainty avoidance, origin and relations are important	Explanatory and illustrative method of education	tutor is a guru objective is moral education, provide knowledge in specific subject principles - contents, perceptual unity of the world view function – Pedagogical, educational, consultative work	symbolic objects (signs, symbols, texts, graphs, charts, tables, formula)

Country	Educationa style	Cognitive characteristics	Operational characteristics	Specific nature of educational communication	Tutorship model	Multimedia technologies
					private tutorship, consultation	
Japan	divergent	high context, polychromic attitude towards time, holistic thinking, reflexive style, striving to live in harmony with environment	multi-active, reactive, long power distance, collectivism, strong uncertainty avoidance, origin and relations are important	Explanatory and illustrative method of education	tutor is a guru objective is moral education, provide knowledge in specific subject principles - contents, perceptual unity of the world view function - Pedagogical, educational, consultative work private tutorship, consultation	symbolic objects (texts, graphs) audio information (oral educational texts, audio plots, audio dialogs, educational commentaries to virtual objects) environment of «virtual reality» (simulators, construction sets, exerciser, interactive models, virtual laboratories)
China	assimilative	high context, polychromic attitude towards time, holistic thinking, reflexive style, striving	multi-active, reactive, long power distance, collectivism, strong uncertainty avoidance, origin	Explanatory and illustrative method of education	tutor is a guru objective is moral education, provide knowledge in specific subject principles - contents, perceptual	symbolic objects (signs, symbols, texts) graphic objects (pictures, objects of computer graphics)

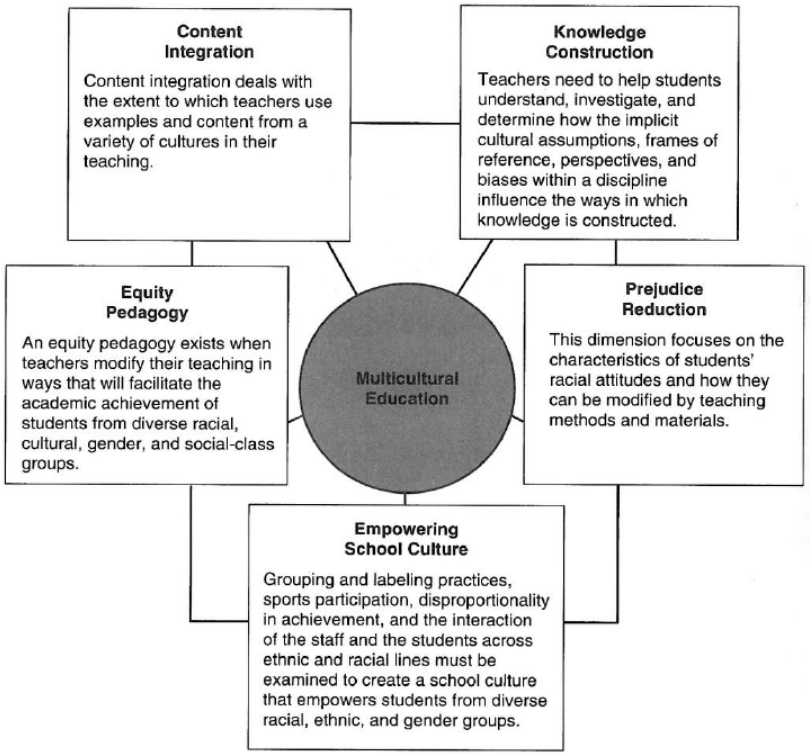
Country	Educational style	Cognitive characteristics	Operational characteristics	Specific nature of educational communication	Tutorship model	Multimedia technologies
		to live in harmony with environment	and relations are important		unity of the world view function – Pedagogical, educational, consultative work private tutorship, consultation	

Appendix 4. Cognitive map of cross-cultural didactics



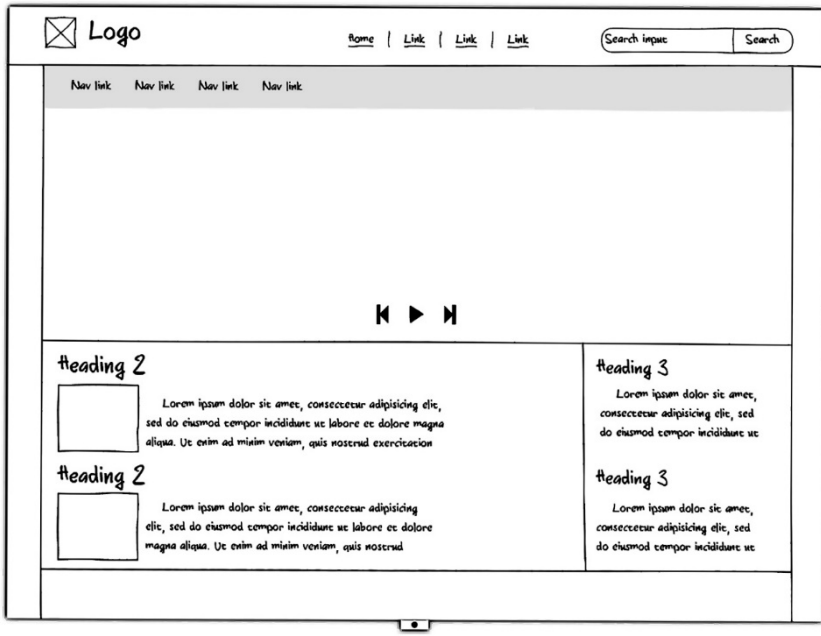
Cognitive map of cross-cultural didactics

Appendix 5. Multicultural education



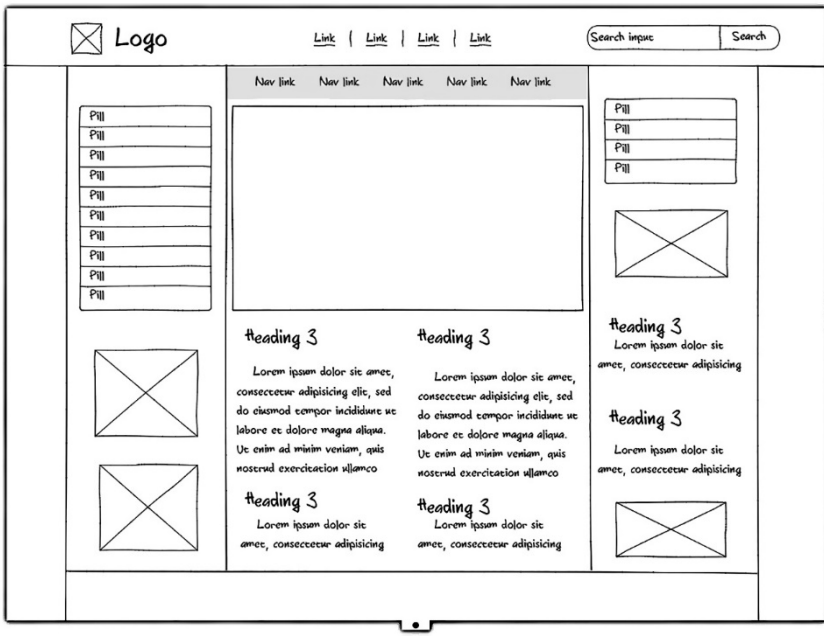
Banks, J. A. (2006). Cultural diversity and education: Foundations, curriculum, and teaching (5th ed.). Boston: Allyn and Bacon Pearson.

Appendix 6. Interface of educational resource in the USA



(Karpova M: 2015, BSc Thesis, HSE)

Appendix 7. Interface of educational resource in China



(Karpova M: 2015, BSc Thesis, HSE)

Appendix 8. Questionary for foreign students

1. Your name, resident country. Your educational program.
2. How long have you resided abroad?
3. Do you have any previous experience of studying abroad?
4. Have you experienced any form of culture shock ever since you have arrived to your current place of education?
5. Do you feel any difference between various aspects of communication between professors and other educational authorities and their students in your current country of residence versus aspects of communication in your home country? If so, which?
6. Do you fully understand the tasks and requirements that you are given by your professors during your educational process?
7. Do you fully understand the system and criteria by which the performance of the students is measured?
8. Did you ever have any issues with group projects when working with members of different cultures?
9. Do you notice any difference between different methods for testing the student's knowledge in your home country and your current one? Which of the major testing methods (multiple choice tests, essays, oral tests) are move prevalent in the country from which you come from?
10. Are there any features of education which you encountered during your study abroad that weren't present in your home country? If so, which?
11. Which aspects of education you have issues with? If so, do think that the main reason for problems in those fields is the inability to adapt to an alien environment?