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## Could Learners Outcomes in Information Literacy Be Measured: Pluses and Minuses of Testing?

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### *Abstract*

*R&D Institution of Information Technologies of Social Sphere within the Kemerovo State University of Culture and Arts has been conducting long-term research of information literacy level's diagnosis for different categories of learners: schoolchildren, students, teachers. It involved two stages: theoretical and experimental for what the theory and practice of measurement tests development both in Russia and overseas were studied.*

*So in the paper it is offered the full description of the tests' structure and classification of their advantages and disadvantages in the experience of learners' outcomes in information literacy; there are shown some further research perspectives of joint practical work of teachers and librarians in this sphere.*

**Why was there a problem of measurement of information literacy?** All world is anxious about a question: how to prepare a person for life in information society and society of knowledge? Necessity of special information training or development of information literacy was reflected in documents of the World information summit (Geneva, 2003 ; Tunis, 2005). In 2006 in Seoul on the 72nd World Library and Information Congress IFLA the Open Forum of UNESCO took place. At this forum the creation of strategic alliance IFLA and UNESCO for realization of decisions of the World summit on the information society connected with activity of libraries was proclaimed, including, alongside with other important directions, development and advancement of information literacy.

Thus, actions on development and advancement of information literacy have global character, they cover not only separate countries, but the world as a whole. From here the problem was born: how to find out, how to estimate, if we operate successfully on development of information literacy? Hence, there is a requirement to measure information literacy, and for this purpose, in turn, special tools measurements are necessary.

**What has already been made? What is known?** In 2002 in Glasgow at 68th Session and General IFLA Conference the new section – section on information literacy was created. By means of this structure the international professional community is consistently solving the whole complex of problems. So, in Guidelines on Information Literacy for Lifelong Learning,

developed by section IFLA on information literacy under the guidance of Mr. J. Lau (1) there is given an answer to the question, what information literacy and what its components are, the concept of information literacy is defined; the international standards of information literacy are offered. There are also the national standards of information literacy developed by library associations of the separate countries (the American Library Association, Association of Scientific Libraries of Colleges of the USA, and Association of School Libraries of the USA). Besides, there is an experience of library society of colleges, national and university libraries of Great Britain, Australia and New Zealand Institute on Information Literacy, the Mexican Forum on information literacy.

The important event in the information literacy sphere became the book by Ralph Catts and Jesus Lau «Towards Information Literacy Indicators» (2) containing definitions of information literacy and research in this field, the interconnection between information literacy and other subjects and sciences. Besides, the authors give information literacy standards indicators, traditions, and criteria for IL teachers, levels of competence and other important issues.

All over the world the importance of special preparation of trainers on information literacy is realized, the whole series of special seminars are for this purpose conducted. Besides, many publications are edited, and many conferences on the problem of information literacy are held.

**What has not been made? What is not known?** One of unresolved problems over which theorists and experts in many countries of the world work now is the search of answers to questions: How to measure information literacy? How to find out if effective the training in information literacy is? The answer to these questions assumes that we exactly know as what parameters are subject to measurement, and we also have tools for such measurement. In other words, the problem essence consists in the search for adequate measurement tools.

**What tools for information literacy measurement exist?** I represent R & D Institute of Information Culture of Social Sphere of Kemerovo State University of Culture and Arts (Russia). In it throughout twenty years the researches in development of information literacy for various categories of learners: schoolchildren, students and teachers - are conducted. Thus, the special attention is given to diagnostics of level of information literacy and search of tools for the measurement allowing to observe how much effectively we train in information literacy.

The analysis of publications and researches has shown that the widest known ways of the control with which to measure investment effect from results of training in information literacy are: 1) the entrance control directed on the analysis of initial level of knowledge and skills of learners in the sphere of information training; 2) the current control focused on an estimation of mastering the material studied now by learners; 3) the thematic control allowing to reveal the degree of mastering a section or a theme of the studied course; 4) the level control which purpose is to reveal the results of a certain grade level (for a semester, for a year); 5) the total control giving the chance to make learners' assessment after studying the whole course.

All these kinds of control over training are carried out by means of a rather limited set of means: by means of oral interrogation, written examinations, pedagogical tests, questionnaires, conversations, supervision, the analysis of the designed information products as results of independent activity after training in information literacy. The most frequent tool of information literacy level's measurement is the testing.

For construction of scientifically proved tests for estimation and control over training of information literacy our scientific personnel studied the theory and practice of designing the pedagogical tests as in Russia and abroad. On this basis three versions of tests to estimate information literacy of teachers, schoolchildren and students have been developed (1999, 2002-2003, 2007).

### **What is possible and what is impossible to measure by tests?**

R&D Institution of information technologies of social sphere within the Kemerovo State University of Culture and Arts has been conducting long-term research of information literacy level's diagnosis for different categories of learners: schoolchildren, students, teachers. It involved two stages: theoretical and experimental for what the theory and practice of measurement tests development both in Russia and overseas were studied.

As a result three versions of tests were developed (1999, 2002-2003, 2007). The first version included 76 items, the second was with 106 ones and the third had 84 items reduced to 60 according to the programmers' demand who worked in international technique of computer processing the testing results.

Basing on the information literacy standards stated in Guidelines on Information Literacy for Lifelong Learning the comparative analysis was conducted.

In 2007 we developed tests for measurement of the 10th graders' information literacy level. Together with librarians and teachers of Velikiy Novgorod, Russia, we carried out the information literacy large-scale research with more than nine hundred 10<sup>th</sup> graders of Velikiy Novgorod.

The received results of research showed what is possible and what is impossible to measure by tests in information literacy.

On the basis of IFLA standards on information literacy the comparative analysis presented in the table was carried out:

Table 1

| <b>Parameters which can be measured</b>  | <b>Parameters which cannot be measured</b>  |
|--|---|
| 1. Access to information.<br>Definition and articulation of the information need<br>Location of information                      | 3. Use of information.<br>Application the retrieved information, development of information product;<br>Communication and ethical use of information with acknowledgement of intellectual property rules. |
| 2. Evaluation of information<br>Assessment of information.<br>Organization of information:<br>generalization and interpretation. |   |

Besides, the results of research have forced us to estimate critically the content and the form of our test tasks. First of all, the orientation on reproductive skills of learners, i.e. only on reproduction of information knowledge and abilities was their main lack. This lack is especially obvious now when in an education system information competences are actively discussed, i.e. ability of learners to operate not under educational, "artificial" conditions but under conditions as much as possible approached to vital, real ones, connected with diverse inconsistent information and non-standard situations. The tests' restrictions have induced to address to search for ways of their perfection for information literacy level's measurement.

**How was search and development of a new measurement tool for information culture conducted? What was necessary to make for this purpose? What procedures had to be done?** First, the problem theory, existing approaches to pedagogical measurements, testing, the analysis of their merits and demerits have been studied. In particular, B.Blum's taxonomy (3), SOLO taxonomy (4), and a new approach offered for an estimation of competence, motivation and behavior, has been studied by J. Raven (5). Among the Russian researches the special attention was given to the level system approach of the description of learners' achievements (6-8). This approach allows to allocate three levels of mastering of teaching material: 1) demonstration of knowledge as direct demonstration by memory of the content of the studied material and its cognizance; 2) the understanding and application of knowledge in a familiar situation as an application of knowledge on the sample, performance of actions with accurately

designated rules; 3) application of knowledge in the changed or unfamiliar situation. On the basis of this approach it is possible to develop test tasks of various complexities' degrees allowing to estimate more precisely achievement of learners to what M.B.Chelyshkova's book (9) on designing of pedagogical texts testifies.

The main conclusion which was taken from the theory analysis is that existing tests, as a rule, allow to estimate knowledge, i.e. check the ability of a learner to remember and revise the obtained knowledge. It turns out, that in practice more often tests allow to estimate cognizance, knowledge, memory and academic awareness. That is exactly the point where the opponents see the main lack and limitations of tests. We, as instructors, wish to check up also the skills of learners to put the obtained knowledge into practice, to analyze real situations by means of the acquired knowledge. The urgency of this problem has increased with development of the competence approach education, change of the paradigm and ideology of educational systems which should be aimed at a competent person's formation. J. Raven (5) writes about it, in particular, in his works.

Second, the analysis of tools which are used in the most known international comparative researches of education quality has been carried out. The international comparative researches in education quality have great scientific and practical values. They allow to estimate the quality of training: not speculative on the base of study the various sources of literature, not on the basis of comparative results of the prestigious international Olympiads for the elite, but by results of the researches conducted on representative samples of various countries' learners with the use of the same toolkit which is created for identification of international education priorities. In Russia the Center of Education Quality Estimation of the Institute of Contents and Methods of Training at the Russian Academy of Education (<http://centeroko.ru>) is involved in this theme. <http://centeroko.ru/>. We carried out the analysis of materials of the international researches conducted in Russia. The analyzed data is given in the table:

Table 2

| <b>The name of research and date</b>  | <b>Organizer</b>  | <b>Research objective upon the learner's age</b>  | <b>Toolkit</b>                      |
|---|---|---|-------------------------------------|
| International Assessment of Educational Progress (IAEP II) (1988-1991)                          | Educational Testing Service (ETS).  | Comparative estimation of training quality of 9 and 13-year-olds in natural-mathematical subjects in the countries with various education systems and identification of the factors influencing learners' outcomes.                     | Tests                               |
| Trends in Mathematics and Science Study (TIMSS) TIMSS-1995, TIMSS-1999, TIMSS-2003, TIMSS-2007, | International Association for the Evaluation of Educational Achievements (IEA)      | Study the training of elementary schools' learners and 8 <sup>th</sup> form pupils in natural-mathematical subjects.  | Tests, questionnaires               |
| Programme for International Student Assessment (PISA) PISA-2000, PISA-2003, PISA-2006;          | Organization for Economic Cooperation and Development (OECD).                       | Estimation of educational achievements of 15-year-olds. The key question of research: "if 15-year-olds received the general compulsory education possess knowledge and skills necessary for their high-grade functioning in a society?" | Tests, questionnaires               |
| Civic Education (CIVIC) CIVIC-1999, CIVIC-2000  | International Association for the Evaluation of Educational Achievements (IEA).     | Study the civic education in the countries of the world for the secondary school leavers to participate in social activity.   | Tests, rating tasks, questionnaires |
| Progress in International Reading Literacy Study (PIRLS) PIRLS-2001, PIRLS-2006                 | International Association for the Evaluation of Educational Achievement (IEA)       | Progress in reading and understanding of the text by fourth-graders showing the differences in national education systems.  | Tests                               |
| Second Information Technology in Education Study (SITES) The module 1 (1999).                   | The International Association for the Evaluation of Educational Achievement (IEA) . | Progress of schools in sphere of application of information and communication technologies, including requirements to personnel potential development and expected results of ICT learners' training                                    | Interrogation, questionnaires       |

The study purpose of these materials is to find out what valuable could be used from already developed toolkits for information literacy measurement. This is especially important because some substantial aspects of information literacy could be used in such researches as PIRLS (Progress in text reading and understanding by elementary school learners), PISA (Programme for International Student Assessment: information search, text interpretation, substantial reflexions of the text or its form and their estimation, and also the analysis of knowledge and the abilities connected with computer use), SITES (skills manifestation in information communication technologies (ICT) which learners should get by the end of the school year).

Valuable data from other researches which did not deal with information literacy and reading were also used.

So, in CIVIC, considerable interest represent the tasks directed on an estimation of learners abilities to be guided in information flows, development of the protection mechanism against a person's consciousness manipulation, on learners' formation of analytical abilities: to compare, generalize, find the idea, and express the opinion related to problems more connected with surrounding life than with a specific school subject.

In TIMSS the tasks connected with information analysis presented in various forms (tables, diagrams, charts) and ones connected with information interpretation and generalization.

Thus, despite of the absence of special International researches in quality estimation of literacy training some substantial aspects such as reading, literacy, texts understanding, working skills with various information, command of computer and ICT, have to be studied. However these data are isolated and are not generalized from the positions of information literacy development.

The results of the analysis interpreted from the positions of humanity entering the information society and society of knowledge and also from the positions of education paradigms changing allowed to come to some conclusions and formulate requirements to the form and contents of tests for information literacy:

1. As information literacy represents an interdisciplinary direction in which library business, the bibliography, computer science, information-communication technologies, semiotics, linguistics and achievements of many other things of sciences are involved, hence, tests on information literacy should have an integration character. In other words, the content of test tasks should reflect synthesis, integration of knowledge from the various sciences connected with search, analysis and information critical estimation. Thus, tests on information literacy should be based on a competence estimation of the problem solving assuming the ability to solve the problems which are not connected directly with certain subjects or educational areas, however often met in a real life and demanding complex use of knowledge and skills from various areas.

2. It is known, that the old paradigm of education aimed at transfer of knowledge and skills in information society and society of knowledge does not work any more. Therefore the education system should be reoriented first of all on imparting skills of independent and continuous learning. Training of information literacy should be directed on skills' formation "to teach to learn" in order to realize on practice the idea of «lifelong learning». Information literacy urged to form curriculum (intersubject, oversubject), that is metaknowledge and skills without which mastering any other subjects are impossible. The intellectual abilities of learners connected with classification, generalization, interpretation and the critical analysis of the information belong to such metaknowledge and skills.

3. Proceeding from a new paradigm of education, tests on information literacy should have a practical orientation, prepare learners for free use of information knowledge and skills in situations of a daily life. Therefore in tests on information literacy it is necessary to change accents from reproduction and application of knowledge in educational situations to their use in various vital situations. Tests on information literacy should be focused not only on knowledge

of a factological material, skills to reproduce them and to apply in a familiar situation, but, first of all, on check of the skills connected with integration of knowledge and their application in unfamiliar situations and in situations which learners should meet in life. Accordingly, at training of information literacy we should teach learners to apply knowledge in vital situations, to form ability rationally to operate on the basis of the received information, knowledge and skills. It is required to develop the test tasks allowing to estimate ability of learners independently to operate, in particular, independently to carry out development of information products as a result of the conducted search and the critical analysis of the information.

4. High dynamism and the rapid rate of changes characterizing all spheres of human life in modern information society and society of knowledge demand from to schools leavers and other educational institutions the requirement to be able to apply the received knowledge and skills in non-standard situations of a real life, to operate on the conditions of discrepancy, uncertainty and ambiguity, incomplete and not reliable information, presence of the alternative points of view. These characteristics demand not a simple set of knowledge and skills but high level of a person's competence. Therefore, tests on information literacy should include tasks of a projective character, i.e. model actions, predict situations which include arguments and judgments of learners concerning those actions or other persons, groups, the organizations connected with information. Especially it is necessary to underline that tests on information literacy should allow to reveal the relation of learners on ethical aspects of work with the information, their reflexions on the most important information problems. Requirement of inclusion into content of the test tasks reflecting ability of learners to reason, prove the point of view for explanation of the actions motives, the made decision in this or that situation, to furnish proofs of correctness of this or that judgment etc. generates necessity for a test tasks variety. They should include not only traditional tasks with an answer choice, but also tasks with freely designed answers.

The results' analysis of the carried out research led us to belief that in tests' structure of information literacy it is expedient to allocate three components: cognitive allowing to estimate information knowledge; operational giving the chance to estimate, skills of learners to operate, put the acquired knowledge into practice in vital conditions, including non-standard situations; reflective allowing to estimate ability to think independently and critically.

It should be mentioned especially about the necessity reflective component. We will preliminary specify that in Russia along with the term «information literacy» widely used close, but not identical to it the concept «Information culture of a person» (10). The fact is that together with positively evaluated international information literacy notion, the concept of a person's information culture formation is also adopted in Russia.

The concept of a person's information culture completely includes the notion of «information literacy» and supplements it with the concept «information outlook» in its content. The information outlook is a system of person's views on the world of information and a person's place in it, including values, believes, ideals, cognitive and activity principles. Relation of outlook knowledge with personal practice is the important condition for transformation of simple awareness in believes. The important condition for transformation of knowledge in believes is independent generation of ideas, principles, and representations (instead of learning by heart set lessons"). The outlook cannot "be hammered into the head", it is necessary to create conditions that a person himself has come to believe.

The information outlook includes motivation of learners for study information literacy. From our point of view, the motivation of learners for defines success of their information train. Apart from information outlook, the concept introduction a person's information culture allows not to tear off information training of learners from culture sphere. It allows to provide synthesis and integrity traditional bookish and new computer information cultures, gives the chance to avoid the confrontation of two polar cultures -- technocratic and humanitarian -- in the information society. As a whole, distinctions between the concept of formation of information culture developed by us and the international concept of information literacy do not carry basic

character, they only reflect our aspiration to combine achievement of the international theory and practice with traditions of national culture and education, the accumulated experience of the Russian libraries and education establishments.

Having identified cognitive, operational and reflective components as a part of information literacy we have correlated them with criteria, and also with measurement tools a person's information culture level.

Table 3

| <b>Components of information literacy</b> | <b>Criteria of information literacy</b>                       | <b>Measurement tools.</b>   |
|---|---|---|
| Cognitive                                 | The knowledge necessary for work with the information and ICT | Tests   |
| Operational                               | Skills of work with the information and ICT                   | The test containing practical tasks, the analysis of the executed information products as results of independent activity after training in information literacy (the portfolio analysis) |
| Reflective                                | Reflexion, motivation for work with information and ICT       | Tests, conversations, supervision, questionnaires   |

This correlation required to design an algorithm verifying tasks in information literacy development.

**What way of an estimation of various components of information literacy and a person's information culture is offered? What do we offer?** We tried to create the «Designer» for measurement of various components of information literacy allowing to combine various tasks. As a whole, tasks from such "Designer" in the aggregate should allow to estimate: What does a learner know? What can he do? What is his belief, how does he argue?

In order to answer these questions it is necessary to have, first, "the details" which are composition elements (terms' lists, information products, problem situations' lists and so on) and using them it is possible to design tests and other control tasks. Second, it is needed to know the preferable way of information retrieving (e.g. closed or opened test tasks, portfolio analysis etc.) Third, it is useful to have tasks' samples, i.e. lists of generalized types of tasks which are the most characteristic, typical for information retrieval reflecting different levels of learning material acquiring: knowledge reproduction, realization and application of knowledge in a familiar situation; knowledge application in a changed or unfamiliar situation.

Here, there is a short characteristic of "Designer" structure allowing to compile the control tasks of different grades of complexity.

For the cognitive component estimation (what does a learner know?) it is necessary to have a list of the most important terms, main concepts and definitions, facts (dates, events, names and so on), laws, principles etc. in work with information and ICT. This list should be compiled according to the principle "necessary and enough", i.e. it should comprise only those terms and concepts without which a person cannot acquire the course in information literacy. Thus for example, in the content of this list of main terms and concepts such as "Information resources", "Information society", "Document", "E-catalogue", "the Internet" etc. can be included. And the list content should correlate to learner's age and training level. To compile this list is possible by the method of experts' evaluation or by content analysis of International

literacy standards and a course curriculum (in our case – Principles of a person’s information culture).

The most convenient way of information access there will be use of closed test tasks with multitude choice where learners choose a correct answer where learners choose a correct answer. Besides edition test tasks (open tasks) can be used. They require answers’ independent formulation from learners.

Task samples reflecting different levels of learning material’s acquiring while the cognitive component estimation of information literacy can be presented in the following way:

Table 4

| <b>Cognitive component of information literacy</b>              |   |   |
|---|---|---|
| Mastering level of learning material                            | Characteristic  | Task samples  |
| Knowledge reproduction  | The learner remembers and reproduces the material, knows the meaning of used terms, ideas and definitions, facts, rules, principles of information work and ICT | Define (when, what is it made of, who, where, etc.), list, describe, establish conformity between the term and definition etc.  |
| Understanding and use of knowledge in a familiar situation      | The learner knows and uses concepts and terms, facts, rules, principles, criteria, theories, etc. in information work and ICT                                   | Explain, characterize, state (difference, dependence, causes), outline essential features, define prearranged method or algorithm, continue or finish a phrase, add an omitted letter, word, phrase, carry out according to a sample etc. |
| Application of knowledge in the changed or unfamiliar situation | The learner knows the earlier studied material and uses it under new conditions   | Tell in your own words, analyze the information and find an error; change, reconstruct, offer your own variant, plan, algorithm, formulate, prove, give reason, etc.  |

For an estimation of the operational component - «what is the learner able to do? » two lists are necessary, at least:

1. The list of skills in work with information and ICT which a learner should have. For example: to issue the citation, to prepare the document using a word-processor, to create an illustration by means of graphic programs, to use e-mail, to carry out information search on the Internet by an actual inquiry, etc.

2. The list of those information products (portfolio) which the learner should be able to prepare independently on the basis of search, selection and critical analysis of information and in which knowledge and separate practical skills are integrated into the whole. For example: a summary, abstract, digest, review, response, etc. This list should also correspond with learners’ age and features of educational activity (with a form in which the learner studies and tasks which he carries out at studying other disciplines). It is essentially important that this list included the tasks connected not only with educational activity but also with situations arising in practice, in a real life.

The following ways can act as ways of receiving information:

- Test tasks for conformity establishment (with a plural choice) which are connected with conformity revealing between elements of two sets;

- Test tasks for an establishment of correct sequence in which the learner is required to specify the order of operations or processes;

- The « Portfolio» analysis, i.e. the analysis of those information products which are independently developed by the learner.

Approximate samples of the tasks using different levels of mastering learning material at an estimation of an operational component of information literacy, look as follows:

Table 5

| <b>An operational component of information literacy</b>                       |   |   |
|---|---|---|
| Level of learning material mastering  | Characteristic  | Task samples  |
| Reproduction of knowledge and skills  | The learner performs correctly a practical action in work with information and ICT to demonstrate the preset information product according to the sample  | Cite, prepare a document using word-processor, send a letter by e-mail; make a bibliographic description of the document, list of keywords, etc.  |
| Understanding and application of knowledge and skills in a familiar situation | The learner knows and applies the obtained knowledge and skills in work with information and ICT to create information products independently   | Make a summary, abstract, digest, review, etc. on the prearranged method; edit of the text to place it on a site according to the given rules; find the definition of an unknown term using the Internet; find thematic information on the Internet according to the algorithm, etc.  |
| Application of knowledge and skills in a changed or unfamiliar situation      | A learner independently creates his/her own information products under new conditions close to vital situations, transfers the known methods of information work in unfamiliar situations, marks out errors, estimates information products' quality according to independently formulated criteria | Prepare a certain information product (a report, digest, review, response, course or degree work) taking into account the set of requirements; transform text information into graphic or tabular form; interpret the information presented in graphic, tabular or figurative form into the text; give reasons for merits and demerits of information products offered for the analysis, formulate criteria for their estimation; make examination of an exact information product; develop a plan of action at..., define the most rational sequence of actions or |

|  |  |   |
|--|--|---|
|  |  | operations for problem solving; offer a way allowing..., find alternatives..., offer the algorithm etc. |
|--|--|---|

Evaluation of an information literacy reflective component (What is a learner's belief; how does he argue?) represents the greatest complexity to be formalized in a smaller degree than the cognitive and operational components' estimation of information literacy. In particular the three-level estimation analysis of learning material's mastering of is not so applicable: reproduction of knowledge, understanding and application of knowledge in a familiar or unfamiliar situation. Nevertheless, it is possible to formalize this procedure using at least two lists for this purpose:

1. The list of judgments in relation to which learners should state the personal estimate, preference, desire to reach something referring to the system of values etc. As a way of obtaining information the most rational is using test tasks of the closed form with a plural choice. For example: Do you agree with following statements?:

«Viewing of nominal folders' contents and files on the personal computer is wrong»:

1. I absolutely agree
2. I agree
3. I disagree
4. I absolutely disagree

«Use of abstracts, course and degree works downloaded from the Internet is wrong »:

1. I absolutely agree
2. I agree
3. I disagree
4. I absolutely disagree

2. The list of key problems with information and ICT work to which there are no unequivocal decisions. For example: the person's right to the information and necessity to pay for it; a person's right to a free access to information and necessity of restriction ("censorship") of this freedom in the Internet, i.e. access for children and teenagers to pornographic, violent, and racist sites etc.

For information access can be used:

- open test tasks when a learner offers and expresses the personal point of view;
- analysis of compositions and essays on key problems written by learners.

Information reception on ambiguous, disputable problems should be given a corresponding explanation to learners that their answer is incorrect and that it should reflect that is truly personal for an actual learner. In turn, processing and interpretation of the received data assumes that the teacher who has provided questioning or testing is tolerant and ready to apprehend the various points of view of learners on a controversial problem.

The resulted fragment of "Designer" is not indisputable, much still should be finished and experimentally checked up. However, the offered approach allows formalizing the level of measurement procedure of trainees' information literacy to make it fuller and objective.

**What is necessary to make and what the difficulties to face?** This research allows to assert that testing possesses considerable possibilities as information literacy gauge. It gives the chance to measure not only cognitive and operational, but also a reflective component. However behind the frameworks of the given article there was a dependence among control kinds: entrance, current, boundary, total - and used type of test tasks. It is necessary to study this dependence and to develop the kinds of tests accurately focused on the purposes of a certain kind of control in information literacy training. It will be necessary for this purpose to prove selection

of the tests' content for a certain kind of control and also to define test tasks' forms: tasks of the closed form with a plural choice in which a learner chooses a right answer from the set of answers; the task for addition, demanding from a learner an independent answer's formulation; the task for a conformity establishment which fulfillment is connected with conformity revealing between the elements of two multitudes; tasks for an establishment of correct sequence of actions. Thus, it is necessary that they in aggregate provided system character of information literacy estimation.

Special complexity is represented by working out of tests for the entrance control before information literacy training as there is no obviously set subject's measurement, there is no «zero reference point», i.e. the educational standard or the curriculum on which basis the learner has received knowledge and skills to work with information and ICT.

The independent problem is represented by working out the test tasks focused on cognitive, operational and reflective evaluative components of a certain category of learners' information literacy (younger, average, senior learners, students, etc.). They should meet the requirements of conformity to age and educational kind or professional work of learners.

The author of the given article distinctly understands that offered allocation of three information literacy components (cognitive, operational, reflective) differentiated on three levels of mastering of a learning material (reproduction, understanding and application of knowledge and skills in a familiar situation, application of knowledge and skills in a changed or unfamiliar situation) considerably complicates the procedure of tests' elaboration. It certainly complicates the procedure of data processing received during testing. However, this complication is an inevitable consequence of expanding possibilities of tests as the measurement tools allowing to estimate information competence, i.e. learners' skills to use information and ICT in practice, in real life, and to find out the information outlook.

### **Conclusion**

Testing is one of the most widespread ways of the control over results of training. Testing advantage is acquirement of objective, comparable and quantitatively measurable estimation of training quality in certain educational area. In turn, objectivity and measurability of education quality open ample opportunities for management of educational process from updating of educational standards' content to teaching methods' perfection and increase of stimulation efficiency for independent studies of learners and students.

As well as any technology having interdisciplinary character, the testing uniting achievements of pedagogic and psychology, mathematics, statistics and the theory of measurements, demands serious preparation from those who is going to use it. First of all, mastering the rules of tests' elaboration and rules of processing and correct interpretation of testing results is necessary. Improperly made (with no approbations) tests can yield erroneous results and harm. At the same time good quality tests are capable to carry out a complex of functions in training: diagnostic, supervising, educative, pedagogic, motivational and developing.

It is unnecessary to absolutize testing. The form choice of the test tasks is defined by specifics of the controllable content in information literacy and purpose of test creation. Thus, each form of tasks has the merits and demerits, the sphere of application. It is necessary to remember that testing is connected with financial and time expenses which depend on a way of its organization. So, the closed test tasks are easily processed and require smaller time and financial expenses. Results of performance of tasks for addition with the open answer require manual processing. For result evaluation of their performance, expert involvement is necessary and it demands additional funding and time.

This research has allowed to utter requirements to the content and form of information literacy tests positioning the transfer of mankind into information society and society of knowledge and also from positions of changing paradigms of education:

- the content of tests should have an integrative character and reflect synthesis, integration of knowledge from various sciences (bibliography, computer science, ICT, logics, etc.), connected with search, analysis and a critical estimation of information;

- the content of tests should reflect curriculum (intersubject, subdiscipline), that is metaknowledge and skills related to the intellectual abilities of learners connected with classification concern, generalization, interpretation and the critical analysis of the information;

- the form of tests should allow to estimate information competence of learners like ability to use effective and correct information knowledge and skills in situations of a daily life;

- the form of tests should allow to estimate ability of learners to operate and to carry out information products' preparation independently, to operate in the conditions of discrepancy, uncertainty and ambiguity, incomplete and not true enough information, requires the alternative points of view.

- the content and form of tests should have diversified character and allow to estimate cognitive, operational and reflective components of information literacy.

The established analysis of the theory and practice of information literacy measurement testifies that it demands a combination of various tools: testing, questioning, analysis of information products' portfolio, etc. Creation of reliable and effective ways to evaluate the information literacy training quality assumes the necessity of further theoretical and experimental researches.

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