Evaluation of the Librarian-Educator`s training Conceptual Model

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Abstract. Author of the paper have developed Librarian-Educator`s training Conceptual Model which suggest the way to prepare librarian-educator`s during librarianship studies. The goal of the paper is to explore methodology to evaluate the validity of the conceptual model of librarian-educator's training in real environment and to propose practical application of the model in the university study programme aimed at the training of professional librarians. The practical application of the model was implemented in real environment at the Faculty of Communication of Vilnius University within the framework of the study programme aimed at the training of professional librarians-educators. The conceptual model validity for preparing librarian-educator`s is outlined.

Keywords. Librarian-educator, librarianship, action research, information literacy, Kirkpatrick's Learning Evaluation Model.

1. Introduction

Development of information literacy skills has been escalated for more than four decades. However, various research data indicate that professional librarians which being educated in the library science are not sufficiently trained to be able to take up the development of information literacy (Albrecht and Baron, 2002; Bewick and Corral, 2010; Click and Walker, 2010; Julien and Genuis, 2011; Mcadoo, 2012). Similar situation is identified in Lithuania (Grigas, 2013).

The majority of research is aimed at the elaboration of the concept of information literacy and methods of its development, whereas studies focusing on the readiness of librarians to take up the development of information literacy skills are few and far between (Julien and Genuis, 2011; Montiel-Overall and Grimes, 2013). This predetermines the need for the training of librarians-educators able to qualitatively develop information literacy skills of the society.

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Results of various investigations suggest that librarians acquire knowledge and skills necessary to the development of information literacy skills on-site by means of self-education or when attending refresher courses. Such practice should be considered faulty. Insights of various researchers suggest that the most effective and rational way to train librarians-educators is by incorporating the training into university studies (Dalrymple, 2002; Johnson et al., 2008; Ishimura and Bartlett, 2009; Click and Walker, 2010).

Author of the paper have developed Librarian-Educator`s training Conceptual Model which suggest the way to prepare librarian-educator`s during librarianship studies. The goal of the paper is to explore methodology to evaluate the validity of the conceptual model of librarian-educator's training in real environment and to propose practical application of the model in the university study programme aimed at the training of professional librarians.

The practical application of the model was implemented in real environment at the Faculty of Communication of Vilnius University within the framework of the study programme aimed at the training of professional librarians-educators. The model was tested twice: the initial test was executed in the autumn semester of 2011-2012 and the principle test was completed in the autumn semester of 2012-2013.

The conceptual model validity for preparing librarian-educator`s is outlined in the conclusion section.

2. Description of the conceptual model

The framing of the conceptual model of librarian-educator's training is based on soft systems methodology (Checkland, 2000), methods of ontology development (Noy and McGuinness, 2001) and the approach of lean thinking (Womack et al., 1991; Womack and Jones, 2010).

The author of the model holds post-structuralist attitude towards the framing of the conceptual model (Murdoch, 2006). This means that the possibility of objective knowledge and one truth is disclaimed thus taking relativism as the basis. "In post-structuralism the system is emphasized and appreciated to a greater extent than the individual" (Murdoch, 2006, p. 9-10), therefore a great share of attention is bestowed on the analysis of interrelations between entities within the system. As suggested by the post-structuralist approach, there are no possibilities to create a strict and finite system.

Softs systems methodology was utilised to control the hitherto non-conceptualized problem of the real world – training of librarian-educator. The methodology afforded ground for the analysis of problematic situation, identification of the key definitions of the system, framing of the conceptual model on the basis of core definitions and execution of its comparative analysis, and calculation of alternatives. The soft systems methodology was also used to identify the hitherto not defined entities of librarian-educator's training and the

properties of their interrelations as well as their structured operation, thus facilitating the control of their interaction with the environment (other systems).

The methods of ontology framing have for the first time been utilised seeking to establish the hierarchical structure and properties of the entities of librarian-educator's training, accumulate structured information on librarian-educator's training and frame the graphic form of the conceptual model.

The methodology of lean thinking has also been employed in the framing of the conceptual model of librarian-educator's training facilitating the design of conceptual model rationally using the system's resources. With reference to the methodology of lean thinking the conceptual model was framed in the current study programme instead of creating a new one.

Using all above mentioned theoretical implications the conceptual model of librarian-educator's training within the university study programme designed for the training of professional librarians was framed.

The conceptual model consists of 42 ontology classes and 28 properties thereof. Classes in the conceptual model are represented without their content. Researcher or practitioner responsible for the application of the model in real environment fills the classes with content. This feature of the conceptual model affords ground for the application of the model in question in various contexts irrespective of changes in conditions and tasks. The design of the hierarchical structure of classes and their properties allows the framing of the graphic representation of the conceptual model with the help of *Protege 4.3* tool. Given the generous size of the graphic representation of the conceptual model and due to space shortage the summary features only a fragment of it. In the said fragment of the model's graphic representation classes are partially filled with content (Figure 1).

Figure 1.Fragment of the conceptual model of librarian-educator's training.
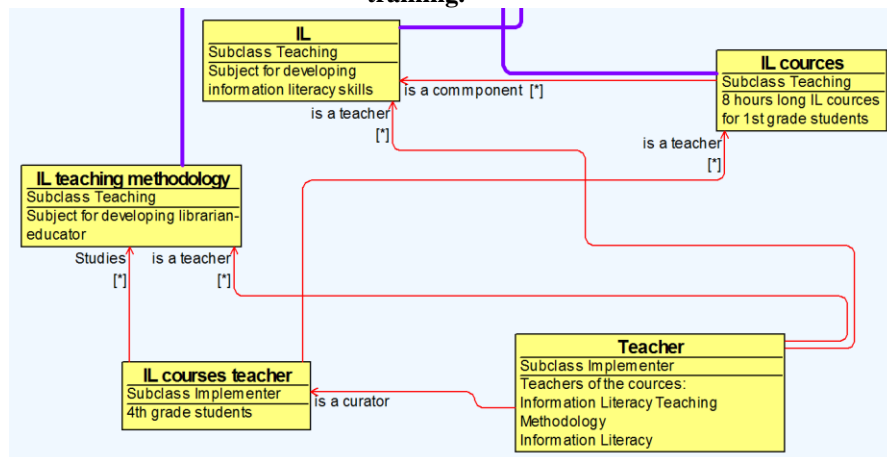
Description of the fragment of the conceptual model represented in Figure 1: Executor **Teacher** [subclass Implementer] identified by (property *is a teacher*) **IL teaching methodology** [subclass Teaching] and **IL** [subclass Teacher] is curator (property *is a curator)* **IL courses teacher** [subclass Implementer]**;** Event **IL courses** [subclass Teaching] is component of (property *is a component)* **IL** implemented (property *is a teacher)* by **IL courses teacher** who studies (property *studies*) **IL teaching methodology.**

3. Methodology for validating the conceptual model
The model validity research methodology is framed on the grounds of the principles characteristic of the action research.

The action research is incarnated in line with the action research implementation steps described by McNiff (2002) and Kemmis and McTaggart (2005) which follow three stages: planning; implementation and monitoring; reflection.

The stage of planning is intended for the description of the problem tackled by the action research and definition of the objectives. In addition, actors of the action research selected by means of random screening are defined. The research is implemented within the framework of the *Methodology for Information Literacy Training* and *Information Literacy* courses.
The stage of implementation and monitoring covers the realization of *Methodology for Information Literacy Training* and *Information Literacy* courses in the concrete training environment. Theoretical principles of action research implementation and principles of problem-based self-education are observed while conducting the research. Monitoring is pursued by means of complex assessment of education activities based on *Kirkpatrick's Four-Level Training Model* (Kirkpatrick, 2005).
The stage of reflection is aimed at the generalization of action research findings and improvement of subject syllabi on the grounds of the accumulated subject assessment data and student recommendations.

Among the key features of the action research is the fact that the stage of reflection is followed by the second cycle. The second cycle is implemented following the introduction of amendments on the basis of problems identified in the initial cycle. The integration of planning, implementation and monitoring, and reflection stages is illustrated by means of action research circles (figure 2).
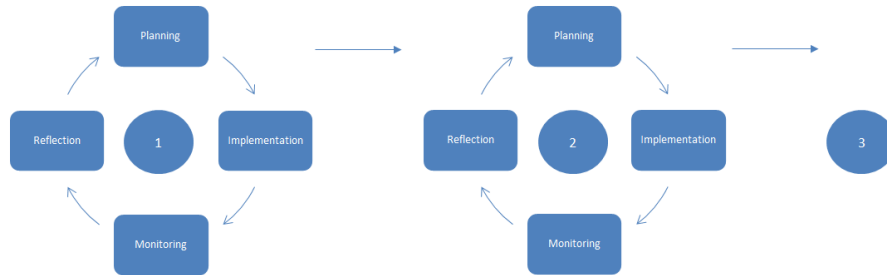
Figure 2. Action research circles (adapted from Perry and Zuber-Skerrit, 1991, p. 76)

The first circle featured in Figure 2 represents the initial research, the second circle depicts the main research and the third circle represents the would-be research as the continuation of the main research.

Let us continue with the elaboration of action research stages.

The stage of planning. The *goal* of the action research is to empirically investigate the leverage of librarian-educators' education model on the preparation of the latter to take up the training of information literacy skills (teach).

Goals of the action research:

- Structure the *Methodology for Information Literacy Training* course; introduce the objectives of the course as well as the goal of the action research to students.
- On the basis of *The Standards for Proficiencies for Standards for Instruction Librarians and Coordinators* (The Standards..., 2007) design the *Methodology for Information Literacy Training* course aimed at the training of student competences necessary to take up the teaching of information literacy.
- Conduct analysis of competences acquired within the framework of the *Librarianship and Information* study programme and their compliance with *The Standards for Proficiencies for Standards for Instruction Librarians and Coordinators* (The Standards..., 2007).
- Implement the subject intended for the training of librarians-educators in the concrete education environment.
- Submit results and suggestions with regard to the education of librarians-educators within the framework of the training of professional librarians at an institution of higher education.

Participants of the action research include teachers of *Methodology for Information Literacy Training* and *Information Literacy* courses and students who have opted for these subjects as well as students who instead of the *Methodology for Information Literacy Training* subject have opted for another optional course.

The main surveyed groups (those studying the *Methodology for Information Literacy Training*) have chosen the subject voluntarily. In the autumn semester of 2011-2012 when conducting the initial librarian-educator's training model efficiency research, 15 students opted for the *Methodology for Information Literacy Training* course. After the introduction of the goals of the course and future tasks, 5 most motivated full-time students of the *Librarianship and Information* study programme, who manifested ambitions to take up information literacy training after graduation, decided to continue attending the course lectures. Analogous situation was observed in the autumn semester of 2012–2013. Those who chose the course were asked to explain (motivate) the reasons behind their decision to continue studying the subject.

The stage of implementation and monitoring. The stage of implementation and monitoring consists of six steps.

The first step of implementation covered the self-assessment of students attending the *Methodology for Information Literacy Training* course (to what extent their skills comply with *The Standards for Proficiencies for Standards for Instruction Librarians and Coordinators*). In addition, self- assessment of students attending the *Information Literacy* course (to what extent their skills comply with the *Information Literacy Competency Standards for Higher Education* (Information Literacy..., 2000) and knowledge test were conducted. Pre-course and post-course testing mean comparison technique was used.

The second step of implementation was dedicated to the in-class analysis of information literacy training solutions conducted by students attending the *Methodology for Information Literacy Training* course. Classes were organized utilizing the technique of problem-based education whereas student activities were assessed with the help of peer evaluation and portfolio methods.

As part of the third step students attending the *Methodology for Information Literacy Training* course analysed concrete problem-posing issues pertaining to their readiness to offer information literacy training to 1st-year students. This stage rested on the technique of problem-based self-education, and student activities were assessed applying peer evaluation and portfolio methods.

In the fourth step students attending the *Methodology for Information Literacy Training* course drafted information literacy syllabus and course content. Here the technique of problem-based self-education was used, and peer evaluation and portfolio methods were employed in the assessment of student activities.

As part of the fifth step those studying the *Methodology for Information Literacy Training* subject presented the information literacy course to 1st-year students. In this stage the activities of students attending the *Methodology for Information Literacy Training* course were assessed by means of quality evaluation response-sheets (questionnaires) submitted by 1st-year students and

expert evaluation (subject teachers assessed the quality of the courses prepared by students *de visu*).

The sixth step covered self-assessment of students attending the *Methodology for Information Literacy Training* course (to what extent their skills comply with *The Standards for Proficiencies for Standards for Instruction Librarians and Coordinators*). In addition, self-assessment of students attending the *Information Literacy* course (to what extent their skills comply with the *Information Literacy Competency Standards for Higher Education*) and testing of their knowledge were conducted. To that end, pre-course and post-course testing mean comparison technique was used.

The stage of reflection. This stage is intended for the generalization of action research findings and submission of recommendations regarding the feasibility of the conceptual model in the development of competences necessary to pursue information literacy training. Results of the action research were assessed with the help of the method of semi-structured group interview. In the non-formalized interview students attending the *Methodology for Information Literacy Training* course generalized the benefits of the course, its positive and negative aspects and the general level of satisfaction while studying the subject. Two tests of the conceptual model – initial and main – were carried out. The initial testing was implemented in the autumn semester of 2011–2012, and the main testing was carried out in the autumn semester of 2012–2013.

In both cases the empirical data were collected on the basis of *Kirkpatrick's Four-Level Training Model* (Kirkpatrick, 2005). *Kirkpatrick's Four-Level Training Model* developed in 1959 to date has been considered the most popular solution of training assessment (Bates, 2004, p. 341).

The model consists of four levels:

Reaction. Reaction of training participants towards the training is assessed. They are asked whether they enjoyed the training and found it useful.

Learning. Acquired knowledge is assessed.

Behaviour. Behaviour is assessed in order to establish what impact the training had on the ability of the students to apply their knowledge in practice.

Results. The tangible profit to the organization (whose employees are participants of the training) is assessed.

Uniqueness of the assessment of training carried out as part of the action research lies in its complexity as partakers of the action research participate in trainings and simultaneously organize trainings themselves, i.e. teach others. This quality is accountable for the fact that *Kirkpatrick's Four-Level Training Model* (Kirkpatrick, 2005) is supplemented with the aspect that not only students who participated in the action research, but also students who attended information literacy course offered by students participating in the action research were subjected to analysis. In addition, it should be noted that due to the particularity of action research participants, assessment of the results of the

fourth level within the framework of the action research is complicated as the said participants of the action research are students. Evaluation of the impact that the training had on the abilities of the partakers to implement their knowledge in practice will only be possible when the students are employed in the library and take up the training of information literacy skills.

Evaluation of librarian-educators' training model consists of four levels, however, the evaluation is carried out in two stages. The first three levels of assessment (reaction, learning and behaviour) are assessed as part of the action research. The fourth level (results), however, will be evaluated after the action research is concluded, the students have graduated and found employment in libraries or other institutions offering trainings of some form or other, and the former participant of the action research is involved in activities pertaining to the implementation of trainings. Table 1 features assessment scheme based on *Kirkpatrick's Four-Level Training Model* (Kirkpatrick, 2005).

Table 1. Data gathered during the initial and main research and estimated samples of testees

Assessment level	Criterion	Description of the criterion
Basic level	1. Reaction	Reaction of training participants towards the training is assessed.	Investigated in two ways: a) 4th-year students evaluate their activities while implementing 8-hour length *Information Literacy* course. Qualitative data. b) Trainings conducted by 4th-year students (8-hour length *Information Literacy* course) were assessed by 1st-year students (rubric type, assessing in accordance with the 7-level Likert scale). Adapted Fielden and Foster's (2010) teaching evaluation quality questionnaire. The questionnaire is filled out at the closing stages of the training. Quantitative data.
	2. Learning	Acquired knowledge is assessed.	Investigated in four ways: a) 4th-year students (experimental group) assess their knowledge with the help of self-evaluation questionnaire (rubric type, assessing in accordance with the 7-level Likert scale). The questionnaire was drawn up following the adaptation of *The Standards for Proficiencies for Standards for Instruction Librarians and Coordinators*. The questionnaire was filled out twice: during the opening class

			and during the concluding class. Quantitative data. b) 4th-year students (control group) assess their knowledge with the help of self-evaluation questionnaire (rubric type, assessing in accordance with the 7-level Likert scale). The questionnaire was drawn up following the adaptation of *The Standards for Proficiencies for Standards for Instruction Librarians and Coordinators*. The questionnaire was filled out twice: during the opening class and during the concluding class. Quantitative data. c) Knowledge of the course attendees (1st-year students) is tested (mixed type test used to assess theoretical knowledge and application of theoretical knowledge). The test drawn up on the basis of the *Information Literacy Competency Standards for Higher Education*. Quantitative data.
Advanced level	3. Behaviour	Behaviour is assessed.	a) It is evaluated to what level participants of the action research applied knowledge acquired in the training during the implementation of the 8-hour *Information Literacy* course. Qualitative data.
	4. Results	The tangible profit to the organization is assessed.	a) It is assessed how the attendees of the *Methodology for Information Literacy Training* course applied the acquired skills in practice. This is the most complicated assessment level as it is influenced by a number of external factors. Qualitative data.

The following methods of statistical analysis were employed for the processing of the said data: *Kendalls's Tau-b* – for the calculation of rank correlation coefficients; *Independent-samples T-test* – for comparison of the means between two unrelated samples; *Levene's Test* – for the assessment of the equality of variances for a variable; *Paired-samples T-test* – for the measuring of the difference between subscales in statistically meaningful means.

As it is provided for in the logic scheme of the action research, corrections in the methodology of conceptual model implementation are necessary after each application of the model in practice.

4. Conclusions

Research findings revealed that after implementing Librarian-Educator`s conceptual model in real environment the course on the *Methodology for Information Literacy Training* attendees – the 4th year students – rated their professional competences as librarians-educators much higher, feedback from students was mainly positive, information literacy skills of *Information Literacy* 8 hours course attendees increased and the assessment from experts who monitored the execution of the course was also favourable.

The improvement of results in the first test session was lower than that in the second test. The methodology of model implementation was slightly adjusted after the first test which helped achieve better results after the re-implementation. This allows the conclusion that the framed conceptual model is appropriate for the training of librarians-educators.

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