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Research Paper

Distance Education: Role and Position of Information Management

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Abstract

Distance education can best be understood in the broader context of using technology to meet society's needs for education. Developments of information and communication technology, new tools are being used by educational institutions. Using modern technological tools changes teaching methodology. Formerly, teachers dominated a big part of their courses while now students play a much more active role, either through centralized learning or self-learning methods. Distance education is a method commonly used because of the advantages of time and place independency. There are various ways to give a lecture from a distance. Satellites, fiber optics, modems ,routers, radio, television, computers, etc. The tools that are used are very important but the usage efficiency of the tools is questionable. Distance education can be delivered by a sole teacher or as part of a campus-wide effort. Campus-Wide LCMS make it possible for technologists, content specialists, instructional specialists, and students to work seamlessly to create and refine distance education keywords: distance education, education theory, education objects, repositories, education content management system. Distance education is important for economic development, both of individuals and of society. The electronic medium could be the internet, intranets, extranets, satellite TV, video/audio tape, and/or cd rom." Technological improvements over time make this task a moving target as newer technology provides an ever-increasing number of possibilities and options. In other words, distance education takes into account four separate and related dimensions: education theories (specifically andragogy, as defined below), psychological dimensions, and demands of the learner, technology, including all form of information and communication technologies (ICTS), and content to be learned.

Keywords: Distance Education; Interactive Learning Environments; Lifelong Learning; Andragogy Pedagogical Issues; E-Learning

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Introduction

Andragogy: History, Meaning, Context, Function

The term 'andragogy' has been used in different times and countries with various connotations. Nowadays there exist mainly three understandings:

- In many countries there is a growing conception of 'andragogy' as the scholarly approach to the learning of adults. In this connotation andragogy is the science of understanding (= theory) and supporting (= practice) lifelong and life wide education of adults.
- Especially in the USA, 'Andragogy' in the tradition of Malcolm Knowles, labels a specific theoretical and practical approach, based on a humanistic conception of self-directed and autonomous learners and teachers as facilitators of learning.

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- Widely, an unclear use of andragogy can be found, with its meaning changing (even in the same publication) from '*adult education practice*' or 'desirable values' or 'specific teaching methods,' to 'reflections' or 'academic discipline' and/or 'opposite to childish pedagogy', claiming to be 'something better' than just 'adult education'.

Adult education or education of adults?

Some writers limit andragogy to a teaching situation (or more in the jargon: helping-adults-learn situation). An early example is lindeman (1926), when reporting from his experiences at the academy of labor, Frankfurt, Germany: he connects andragogik (using the German term) with teaching by giving his article the title 'Andragogik: the method of teaching adults'. Knowles, who brought the Americanized version "andragogy" into discussion, also uses this limiting understanding: 'andragogy is the art and science of teaching adults'. This definition is generalized by Krajinc (1989, p. 19) from Slovenia in a British international handbook: "andragogy has been defined as…'the art and science of helping adults learn and the study of adult education theory, processes, and technology to that end other authors include 'education and learning of adults in all its forms of expression' (Savicevic, 1999, p. 97). Reischmann (2003) offers the term 'lifewide education' to describe the opening of this new field, thus encompassing formal and informal, intentional and 'en passant', institution-supplied and autodidactic learning.

These differences in understanding have to be seen in a historic development of the perception of 'adult education': what was perceived as 'adult education' in 1833 or 1926 is different from 1969 or 2001. While until the 1970's the interest in adult education was focused on the action-oriented questions "how can teachers/facilitators support the learning of adults?", now a new, more analytical-descriptive perspective was added. From the 1970's on it was more and more perceived and discussed, that learning of adults did not only happen in more or less institutionalized or traditional settings, arranged specifically for the learning of adults. In north America Allen tough's research about adult learning projects provided evidence that only the 'tip of the iceberg' of adults learning was 'adult education'. In Germany, the perception of learning in social movements like self-help groups or citizen-initiatives (peace-movement, feminist groups) started the discussion about the 'Entgrenzung' (de-bordering) of adult education. Distance - and e-learning, assessment of prior learning, learning in non-traditional forms, life-situations as learning opportunity, and other non-school-oriented forms and situations where adults learn widened the perception that the education of adults happen in more situations than just in adult education.

Teaching: appreciating and complexity

The Informing Science Framework (ISF), as seen in Cohen (1999, 2003, 2004) informs our understanding of education in general and distance education in particular [1-3]. We describe the framework below, but it is worthwhile to state here some of its implications to the topic at hand. When applied to higher education, ISF helps us understand that all learners have their own psychological makeup and their own pre-existing knowledge, skills, and abilities. Education occurs when the adult learner's immediate requirement to solve some task or tasks is paired with a series of education opportunities. ISF suggests that teaching occurs by the instructor creating, sequencing, and delivering education opportunities. Put another way, the roles of the instructor include creating a knowledge delivery environment, regardless of whether the instructor also creates new knowledge.

Finally, ISF informs us that knowledge delivery is more than just presenting knowledge. The typical college student is literate, so textbooks can be very effective as tools for the presentation of knowledge, and teaching is more than just giving a textbook to a student. Ideally, the knowledge, skills, and abilities that are being learned must be packaged, sequenced, and delivered in response to each learner's unique needs. The instructor is the one responsible for this packaging of education resources and opportunities. when we conceive of adult education in this way, that anyone can learn in typical university settings is a bit of a miracle. "good students" is the term we use for those whose intelligence allows them to learn despite poorly constructed teaching systems .

Knowledge and teacher

Distance education systems are said to convey knowledge, but this begs the question, "what is knowledge?" This paper acknowledges that knowledge is often difficult to define fully, measure accurately, and apply uniformly. Here is a brief overview of the issues. Some authors, such as Slack (2003), define knowledge just as a collection or accumulation of information [4]. Most, however, view knowledge as being more than information; that information needs to be coupled with the ability to use it. Baborski (1994) defines knowledge as a set of information that enables one to draw conclusions from premises. Here again, we understand knowledge is not just information, but has an accompanying ability to apply this information to some problem or task. This is a key point. Under these definitions, knowledge exists only as an artifact of a problem or task in interaction with the problem solver. Conveying

knowledge is a task of transmitting to the learner an understanding of the problem or task in a form that makes sense for that learner. This point is made even clearer when we define knowledge in terms of psychology. The most succinct definition of knowledge can be found on word net (N. D.) As "the psychological result of perception and education and reasoning".

In other words, to understand what knowledge is, we need to understand psychological aspects of the individual learner. Distance education certainly involves conveying knowledge. And since the definition of knowledge is linked to understanding the problem or task faced by the learner, we need to consider the learners' psychology as well. Therefore, to understand distance education, we need to understand the psychological needs of the learner. Stated in different words, the best ways to teach require involving the student in the problem to be solved. For this reason, the role of the teacher under distance education is evolving**.**

As we noted above, the role of the teacher in distance education is not limited to being the presenter of knowledge. Distance education requires more from teachers than, say, merely presenting lectures. ICT enables teachers to package education opportunities in an increasing number of alternative ways so as best to meet the varying needs of different students (and college deans).

This is not new. One of the first ICTS to change the role of the teacher may well have been the postal service in its role as part of the delivery system for instruction material to distant learners. Even today, some schools, such as the University of South Africa, rely principally on mail for the delivery of its correspondence courses. But more and more, mail is being replaced by email, and printed handouts are being replaced with web-based knowledge transmission. New ICTS offer new opportunities for teaching. They build on the same principles and opportunities of teaching to many individuals at each learner's own rate (compared with teaching to a class of students meeting at the same time in the same place). Indeed, even traditional classroom teaching is being supplemented by the lessons learned on how best to teach at a distance. In the traditional lecture-based education, typically found in large universities, students and teachers are at the same place (often a classroom) at the same time, education the same lesson. The traditional approach holds that teachers (and perhaps the textbook) are the principal source of knowledge delivered to students. Teachers can call upon ICT support, such as audio/ video materials, slides or films. Students can use supplementary means to obtain knowledge, such as manuals, books, and such. But the lecture is the key to education. (the rationale behind lecture-based education is that it is cost-effective, not that it is efficacious in conveying knowledge). Instruction in the distance education system needs to be different, if for no other reason than the teacher is not physically present to keep students awake. Distance education systems replace the teacher as the center for education. In distance education systems, the principle source of knowledge is not a teacher but knowledge bases collected, assembled, and sequenced by the teacher, along with possibly with links to other sources of information, typically accessible via the internet. The teacher role shifts from lecturer to that of course developer and, once a course is in session, the course facilitator. The main differences between models of education are shown in table 1.

The students' role in distance education can and should become one of problem solvers. When used properly, distance education systems enable students to be active in their own knowledge acquisition, often using the following forms of cooperative education :

- Common education within the team ,(students no longer need to find a time to meet, as many meetings can be held asynchronously).
- Interactive process of group building of knowledge, (students leave notes for other students to read and critique)
- Active participation in generating and selecting of information,(not every student needs to be an expert in all topics; instead, they can teach one another the topics that interest them the most).
- Constructing knowledge in the context of other students' points of view.(student interaction teaches them that more than one viewpoint can be valid).

Table 1. Types of education models.

Model feature	**Traditional model**	**Distance education system (e- education)**
Main knowledge source	Teacher	Knowledge bases in education system; any knowledge source accessed via the internet
Additional knowledge Sources	Books, manuals, audio, And video materials	Traditional sources teacher, fellow students
Assessment	Only by teacher	System and teacher who is Responsible for final assessment
Quality of education	Depends on teacher's quality, level of knowledge, and ability to share knowledge	Depends on quality of electronic knowledge sources and other didactic materials

Where and when does teaching take place?

No longer is teaching limited to taking place with all the students at the same place at the same time. Distance education can be seen in terms of four basic situations, as seen in table 2:

1. The same time and the same place of education – students and teacher are synchronized (in time and place). This kind of a model can be seen as a traditional model.
2. The same time, different places – teaching occurs at the same time, but uses media transmission technologies so that students can be located in different places (a synchronous model). (this is often seen in "TV" classrooms in which while the teacher talks to one class of students, the lecture is telecast to other classrooms. Internet-based online meetings or chat sessions are other examples of this.)
3. Different times, the same place –when students are taught in educational center and they can come there when they want to learn and have access via computer net, mainly internet to the education system,
4. Different times, different places (an asynchronous model) when students access education system from different places at time convenient to them. All communication is realized through ICT, typically the internet.

Characteristics of a distance education

Environment components of a distance education system

The Informing Science Framework (ISF) is useful for understanding distance education systems [1,2]. Above we introduced some of the implications of ISF. Let us now examine this framework in greater detail as applied to teaching in higher education and depicted in figure 1. ISF holds that many phenomena involving using ICT to inform clients, including education in higher education, can be understood through the relationship of three environments: the information development meta-environment, the delivery environment, and the information using environment.

In brief, the information development meta-environment deals with the making of plans for informing clients. This meta-environment includes a model for creating plans, plans for creating instances, and instances. This corresponds in the higher education to activities that range from (at a university level) deciding on what faculties or majors to offer, to developing curricula for a given major, to developing and implementing individual courses.

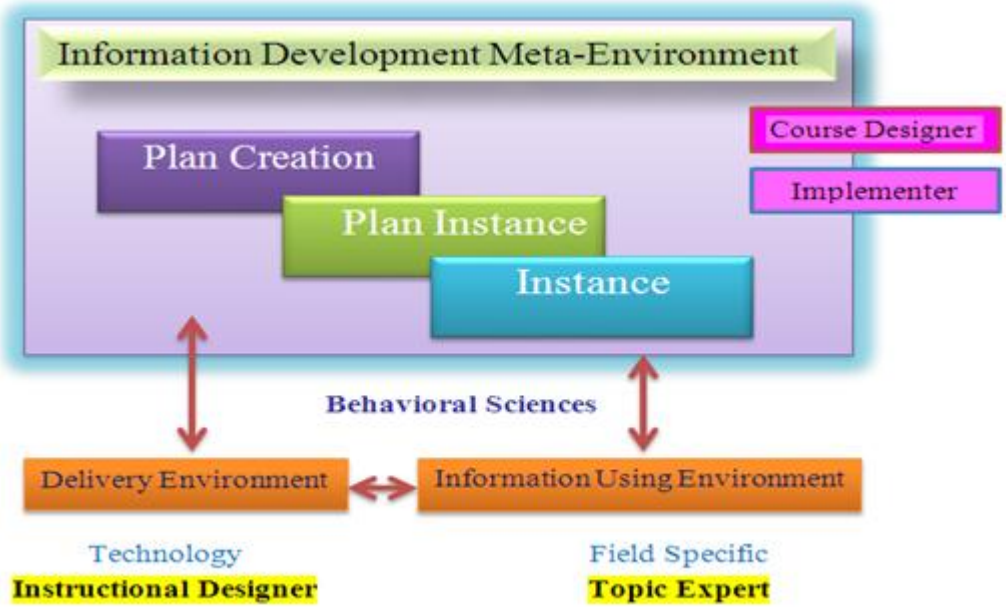

Figure 1. The Informing Sciene Framework Apllied to Higher Education

Table 2. Four basic situations for Teaching/Learning

	Same time (Synchronous)	**Asynchronous**
Same Place	Type 1: Traditional Classroom	Type 3: Learning Lab
Different Learning Locations	Type 2: ''TV'' Classrooms	Type 4: Distanse Education

The delivery environment is concerned with the available ICT as well as the packaging of the information into the optimal sequence and media for the target learner. The information using environment contains the experts on the topics being taught and the students who wish to learn this information. One implication of the ISF that we have not yet explored is that it helps us understand and tease out the various roles required in teaching. As applied to higher education, the three environments correspond to the roles of course designer, instructional designer, topic expert, and course implementer, as noted in figure 1. In many college classrooms, the same person plays these various roles, such as determining the course goals and objectives, gathering course materials and creating new course material, selecting and sequencing the presentation of these materials, and then presenting the course to one or more sets of students, assessing student education and making slight adaptations to the course presentation to meet student (and administrative) needs. But these roles are distinct. By recognizing that these roles are distinct, we understand that different people may specialize in one or another role. This understanding allows us to broaden our thinking about education and how it can be conducted in distance education. Of particular interest to readers, the informing science framework helps us appreciate the role of the instructional designer. The person(s) who play this role needs to understand both the technology and how it can best be used to support distance education. The instructional designer needs to scout out and evaluate ICT developments for possible use in distance education. Wiley and waters (2005) describe the role of the instructional designe [5]. Understanding the various roles involved in teaching and the possibility of task-specialization leads to a fuller understanding of the impact of education objects on the future of higher education. The course designer may assemble a course from, for example, pre-existing education objects that have been created by others. The topic expert creates knowledge that is "packaged" for others to re-use by instructional designers. The course designer's job is to fashion and weave these pre-packaged education segments into the design for a course. The course is actually conducted by the course implementer who assists the students to interact with the course material. The formal term for the "packaged" knowledge is an education object.

A education object is a type of knowledge object. Objects, by definition, are self-contained and reusable. To be re-usable, its content and presentation are separated. Education objects are types of knowledge objects in the sense that their goal is to provide knowledge in support of an associated education objective. Commonly, education objects' presentations include a variety of media, that is, they are multimedia in format, but this is not a requirement. Likewise, commonly their content is organized around standards such as sharable content object reference model (scorm- http://www.adlnet.org) or IEEE education object metadata (IEEE lom - http://ltsc.ieee.org) to create metadata about the contents of the education object resource. SCORM and IEEE lom are standards that aid reusability, interoperability, and accessibility of education objects. Malaxa and Douglas (2005) deal with the issue of creating metadata for education objects in greater depth [6]. Friesen (2005) discusses in greater depth e- education standardization in the quest toward interoperability [7]. Education objects are not necessarily strange, novel, and futuristic entities. In the minimum, education objects can be created by capturing (to video) and indexing individual lectures with associated presentation materials, as seen in Bodendorf, Schertler, and Cohen (2005) [8]. This collection, storage, and reuse enable the lecturer to turn the event of giving a lecture into more than a single performance to a single set of students.

Authoring resources

Bodendorf, Schertler, and Cohen's (2005) article makes clear the need to provide tools to the people creating education objects [8]. The tool described there allows mere professors, with no extraordinary training, to create rudimentary education objects. Recker et Al., (2005) describe a variety of tools available to both professors and instructional designers for creating education objects. These tools are known as authoring resources [9].

Education object repositories

Associating and storing metadata about the education object with the education object makes it possible for a course designer to search for and locate existing education objects. For this to work, those objects must be stored in an accessible location and form. Such locations are called education object repositories. There are two types of education object repositories. The first type contains only the metadata for education objects such as merlot (http://www.merlot.org). The actual education objects are stored in various locations. The second type holds both the metadata and the education objects in one location. An example of this type of repository is Dspace Open Software (dspace.org). Nash (2005) provides a list of education object repositories [10]. Namath, fritz ,king, and boren (2005) point out that the term education object repository is used to mean two related, but different things: a repository for local (university) needs, and a general clearinghouse for education objects from across many different sources. The term, as presently

used in the literature, is applied to both of these situations.

Not surprisingly, systems are available to combine authoring resources with tools for storing and retrieving education objects. The term education content management system (LCMS) is used for a system that is more capable than a simple education object repository. Commonly, this term is used for systems that contain components that support authoring, combined with a education object repository and tools for delivering the objects to students, as well as administrative tools. Bruce**,** 2004 defines it as a "*software application (or set of applications) that manages the creation, storage, use, and reuse of education content*" [11]. Hayhoe (1998) depicts these same components using slightly different wording, as seen in figure 2 [12]:

- System for collecting and creating knowledge assets (content authoring system),
- Resource management (distance education object repository),
- System for delivering content to students (content delivery system), and
- Systems maintenance (administrative tools)

An example of an open source LCMS is the basic distance education tool set (belts) project http://belts.sourceforge.net) while blackboard academic suite (http://blackboard.com) is an example of a commercial LCMS. Moodle (http://moodle.org) also deserves mention here, even though it is not a full LCMS. It is open source software that provides a web-based content delivery system and administrative tools, as well as authoring tools, that lacks an education object repository.

Up to this point, we have looked at LCMS from the point of view of the objects. Hayhoe (1998) shows in our figure 3 how a center for distance education might function with respect to the system mentioned above [12]. Commonly, campuses standardize on one LCMS and set up a center for distance education to support the venture. Let us now focus on how education space, one such LCMS, works.

Learning space as a LCMS

Education space as a LCMS to understand the relationship between centers for distance education and the LCMS, it is worthwhile to explore one LCMS in detail; IBM lotus corporation's product education space is a commercial LCMS. It is a domino application; this means that the system runs on top of (and so requires) other proprietary software on a central server. As with other LCMS, students interact with the instructor and other students through computer network asynchronously. Students work at their own pace, so long as assignments are completed and the exams taken by their due dates.

Education space offers a multi-database application suite that supports a rich spectrum of content delivery. Specifically, it relies upon the following five databases:

- ***A schedule database***, which is a central module for participants to navigate through course materials. The schedule may be developed and organized by time frames as well as by models for self-paced instruction. The schedule links participants to readings, assignments, and quizzes.
- ***A media center database***, which contains a variety of multimedia documents: articles, videos, sound recordings, newsletters, chapters, abstracts, and summaries. It also can provide access to external sources, such as the web and other content repositories.
- ***A virtual course room***, which acts as an interactive, facilitated environment for participants to engage in public and private discussions among themselves and with the instructor, to share information, and to complete team tasks and assignments.

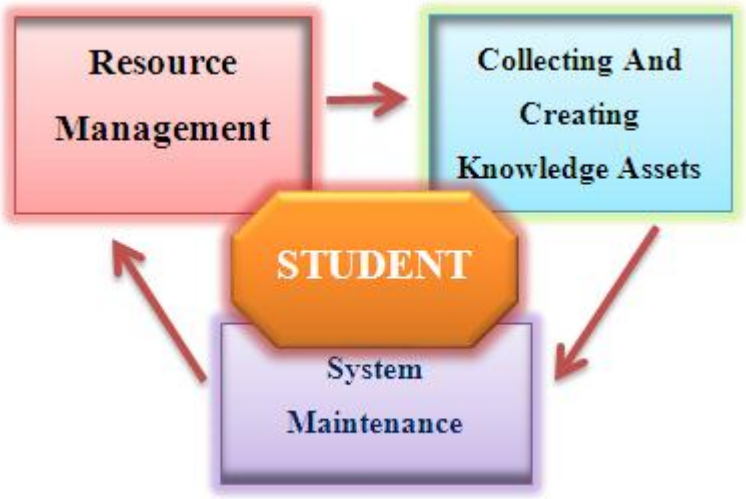

Figure 2. Learning Content Management System, (Adapted from Hayhoe, 1998) [12].

- ***A profiles database***, which is a collection of participant descriptions including contact information, photographs, experience, and interests.
- ***An assessment manager database*** that is accessible only by the instructors and that serves as an evaluation tool for the instructor. The system stores test results and other feedback on each student in this database. Quizzes are posted in the schedule database and are then transferred to this database.

Informing science framework and education space

Education space participants include administrators, designers, instructors, students, and users. Here is what we mean by these terms and how they relate to the informing science framework:

- ***Administrator***. The administrator makes sure that course has all the proper students and databases, as well as conducting many others tasks needed to keep the system working. For example, the administrator backs up the databases, adds and removes course participants and specifies software settings for a course. There is no comparable role in the informing science framework.
- ***Designer***. The designer role is quite similar to the course designer in the informing science framework shown in figure 1. This participant is responsible for assembling the contents of the developed courses. In addition, the education space-specific tasks include setting software parameters of the course, registration of students, identification of instructors or facilitators, completion of the course profile procedure in education space central, identification, and then purchase or development of any necessary course materials.
- ***Instructor***. The instructor is directly comparable to the course implementer in the informing science framework. The instructor interacts with students using one of the developed courses.
- ***Student and user***. The student role corresponds to the client in the informing science framework. Education space enrolls users, people with a lotus notes account, in one or more courses, making them students

Conclusion

This paper has developed the idea of distance education from its fundamental (what is knowledge, what is teaching) through how distance education is being implemented using campus-wide LCMSS. We have seen that distance education can be difficult to understand because many people use the term differently. Beyond the differences are some basics agreements that this paper explored. Distance education needs to be understood in the broader context of using technology to meet society's needs for education. It also requires us to understand that adult learners have psychological needs that distance education must address. The informing science framework helps us understand that teaching in higher education involves a cast of roles that might best be performed by different specialists.

Distance education is often delivered using specialized software that assists teachers create their courses, the student in using coursework, and the administrator in making previously developed coursework available for re-use. It works hand-in-hand with education objects and education object repositories. Campus-wide LCMSS make it possible for technologists, content specialists, instructional specialists, and students to work seamlessly to create and refine distance education.

References

1. Cohen, E. B., 1999. From ugly duckling to swan: conceptualizing information systems as a field of the discipline informing science. *Journal of computing and information technology* 7(3): 213-219.
2. Cohen, E. B. 2003. A modest proposal for the survival of our profession: applying the informing science framework to higher education [keynote address]. Proceedings of the australasian society for computers in education in tertiary education (ascilite), December, adelaide, Australia.
3. Cohen, E. B. 2004. Applying the informing science framework to higher education: knowledge develops ment, management, and dissemination. Konferencja pozyskiwanie wiedzy i zarządzanie wiedzą (proceedings of the knowledge acquisition and management conference) may 13-15, poland.
4. Slack, F., M. Beer, G. Armitt, S. Green. 2003. Assessment and education outcomes: the evaluation of deep education in an on-line course. *Journal of information technology education* 2: 305-317.
5. Wiley, D. A., S. H. Waters. 2005. Scoping and sequencing educational resources and speech acts: a unified design framework for education objects and educational discourse. *Interdisciplinary journal of knowledge and education objects* 1: 143-150.
6. Malaxa, V., I. Douglas. 2005. A framework for metadata creation tools. *Interdisciplinary journal of knowledge and education objects* 1: 151-162.
7. Friesen, N. 2005. Interoperability and education objects: an overview of e- education standardization. Interdisciplinary disciplinary. *Journal of knowledge and education objects* 1: 23-31.
8. Bodendorf, F., M. Schertler, E. Cohen. 2005. Producing reusable web-based multimedia presentations. Interdisciplinary *Journal of knowledge and education objects* 1: 127-142.

9. Recker, M., J. Dorward, D. Dawson, X. Mao, Y. liu, B. Palmer, S. Halioris, J. Park. 2005. Teaching, designing, and sharing: a context for education objects. *Interdisciplinary Journal of knowledge and Education objects* 1: 197-216.
10. Nash, S. S. 2005. Education objects, education object repositories, and education theory: preliminary best practices for online courses. *Interdisciplinary Journal of Knowledge and Education objects* 1: 217-228.
11. Bruce, C., L. Buckingham, J. Hynd, C. Mcmahon, M. Roggenkamp, I. Stoodley. 2004. Ways of experiencing the act of education to program: a phenomenographic study of introductory programming students at university. *Journal of Information Technology Education* 3 143-160.
12. Hayhoe, G. F. 1998. Evaluating distance education in graduate programs: ensuring rigorous, rewarding professional education. Paper presented at the international professional communication conference,23 september, québec city, Canada.