

ICT USE IN CREATING ENVIRONMENT SUPPORTING STUDY PROCESS AT UNIVERSITY LEVEL

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Abstract

The paper gives an account of a piece of research on ICT-based designs supporting study process at higher education level.

The research was conducted with the aim to find out how a set of ICT-based elements and arrangements can serve to facilitate the achievement of pedagogical objectives important for an effective study process. The pedagogical objectives were formulated within the framework of Andragogy. Special attention was paid to successful adjustment of a student to the context of higher education, acceptance of the specific requirements of the context, awareness of the processes in the groups of students, finding means to address members of heterogeneous groups.

The process of adapting to the particular HE context with its requirement, rules, implicit and explicit relations with the teachers and peers might cause difficulties and impede learning.

The students entering the university-level studies are diverse on several lines, including their previous life and teaching/learning experience, attitudes and expectation.

While a number of approaches are found in pedagogical (andragogical) literature emphasizing the distinctive characteristics of individuals to be targeted and taken into consideration to facilitate incorporation into the study environment, a need is felt for a unifying approach in delivering instruction, embracing a collective perspective.

The groups of students were considered from a structuration perspective developed in social studies by A. Giddens because it helps to look into the processes of adjustment to a new environment in group interaction with the environment, makes clearer than other perspectives how to achieve consistent transformations in attitudes and behavior, suggests possibilities of intervention to facilitate the target transformations in attitudes and conduct. Specifically, the notion of "practical conscience" was fed into the design of ICT environment supporting study process.

Current pedagogical ideas on effective teaching/learning approaches are reviewed as to their correspondence and correlation to the considerations employed for creating the ICT-based elements and arrangements supporting teaching/learning. The outcomes of pedagogical treatment the students received was evaluated in terms of affective factors, motivation, self-esteem and other criteria specifically developed for the purposes of this research.

Keywords:

ICT in education, higher education, pedagogy, andragogy, practical conscience, affective factors, self-esteem, learning motivation.

Introduction

This paper is related to the issues of pedagogy in the sense that pedagogy is primarily concerned with the personal growth, which is taking place in educational setting. The target group looked into here is adults entering undergraduate studies. Currently, andragogy has been considered more relevant to the specific issues of adult education. However, andragogy is not viewed as being dichotomous to pedagogy; rather they

are on a continuum. (Knowles, 1984). Andragogical principles draw on Maslow's hierarchy of human needs with the emphasis on the higher order needs for love affection and belonging, esteem needs, and the need of self-actualization. A range of issues specific for Andragogy are clarified through humanistic psychology, thus similar to pedagogy emphasizing personality development in the educational setting. Historically the higher education has always had a

social - integrative function. The modern view of how the social integrative function could be realized is expressed in literature and supported in a number of documents.(ESIB n.d.).One of the most vital current issues on the agenda of adult education is participation in lifelong learning (Europe-Education & Training – lifelong learning, n.d.). Positive developmental experience has been identified as facilitating further participation in lifelong learning (Cross, 1981). Accordingly, negative or unsuccessful learning experience is regarded as a factor, which might preclude or hinder further participation of adults in education (Carp, Peterson, and Roelfs, 1974 as cited in Cross, 1981). Thus providing such experience has become an important task for an educationalist. The aim of this paper is to explore means and methods to be employed to ensure positive and developmental experience for the target group of adults entering undergraduate studies.

For the purposes of this research the vector of developmental experience was defined in conformity with the principles of learning community (Bezzina, 2006; Hord & Sommers, n.d.) and self-directed learner (Brookfield, 1985; Cross, 1981; 1978; Knowles, 1973; Mezirow, 1985).

Positive learning experience is viewed as linked to effective integration of a student into the context of higher education.

The research question has been formulated by the authors as follow: how ICT can be used to help create positive developmental learning experience for the students entering studies at university level.

Theoretical framework and definitions

Our research aims to reveal the meeting points and dynamics among the context (of university studies) ↔ the learner's experience ↔ and the support provided by ICT design

Context

The definition of the context as given in Luckin et al. is viewed as relevant for the research, as the definition brings to the forefront the interactions among the participants of the process (in our case, the interactions among the participants of the study process) and their relationships. In other words, those are issues defying straightforward explanations, while being implied in everything which takes place during the study process. Therefore, the context is understood as:

a situation defined through the relationships and interactions between the elements within the situation over time. More specifically, in the case of a learner's context we can describe it as a situation defined

through social interactions that are themselves historically situated and culturally idiosyncratic. (Luckin et al. n.d.).

Relevant to our research purposes Luckin et al. also acknowledge the importance of the context and ability to understand it for positive learning experience.

It is also evident that getting the context right can lead to better learning experiences. (Luckin et al. n.d.)

The theory of structuration

Exploring the dynamics or the forces that tend to produce activity and change among the context-experience and ICT as above we are initially based on ideas of A.Giddens and his theory of structuration for several reasons.

The theory of Structuration, deals with the evolution and development of groups and organizations.

1. The theory views groups or organizations as systems with («observable patterns of relationships and communicative interaction among people creating structures»).
2. Systems are produced by actions of people creating structures (sets of rules and resources).
3. Systems and structures exist in a dual relationship with each others such that they tend to produce and reproduce each other in an ongoing cycle. This is referred to as the «structuration process.»
4. There exists a dynamic interplay “practical consciousness” (tacit, take-for-granted knowledge) and “discursive consciousness” (knowledge/reasons that can be verbally articulated) as social agents reflexively monitor and rationalize their activities/practices. Practical consciousness is emphasized to a greater extent in this process (Giddens, 1986).

The notions of practical consciousness and practices give us the theoretical template to facilitate transformations that take place in the process of application in practice, enables us to form the target skills and approaches as kinds of transformations occurring in the study process.

DeSantis' idea that AIT (ICT in our text) can be viewed as sources of social structure (DeSantis, 1994) provides a necessary link to ICT elements as a component of the context as understood in our research. And further, the specific act of bringing into action the rules and resources from Advanced Information Technology (AIT) is regarded as the structuration process by which social structures (whatever their source) are produced and reproduced in social life.”(DeSantis, 1994). When the social

structures of the information technology are brought into action, they may take on new forms. That is, interpersonal interaction may reflect rules and resources that are modified from the information technology. When a group uses rules built into a Supporting system FORUM, it is (1) employing the rules to act, and more than this (2) it is reminding itself that these rules exist, working out a way of using the rules, perhaps creating a special version of them. In short, the group is producing and reproducing the Forum's rules for present and future use. Therefore, in the process of structuration "enduring sets of cognitive scripts are created bringing about a kind of transformation" (DeSantis, 1994). New forms of social structures can emerge in social interactions. Only through appropriation – when the structures are used and accepted they become institutionalized. Through consistent use structures become stabilized in group interaction if the group reproduces them in similar form over time. In sum, the social structures available within advanced information technologies provide occasions for the structuring of action.

DeSantis also relates to the "spirit" in the group interaction, observing that in their actions and interaction groups may strive for a spirit of efficiency or democracy. (DeSantis, 1994). The idea of 'spirit' emerging as groups are employing technologies is relevant to our aims to achieve attitudes and to achieve transformations in attitudes. Such aims can, supposedly, be achieved if target actions charged with the desired attitudes are produced and reproduced until they are institutionalized.

The assumptions of A.Giddens and G.DeSantis were fed into the ICT design for several reasons:

- they provides means for pedagogical intervention required to achieve the target transformations in the students' attitudes through modeling the behaviour
- they have the potential to influence the development and consolidation of the students' attitudes

The theoretical assumptions central for our research do not disagree with the theory more traditionally drawn upon by educators, such as

- the socio-cultural, (Vygotsky, 1978,) social constructivism approach based upon the principle that the process through which an individual's mental functioning develops is an interaction between that individual and her socio-cultural environment. The nature of this interaction influences the nature of her resultant mental processes. Thus emphasis is laid upon the importance of learners' interactions with their environment as the precondition for formation attitudes.

- social learning theory postulating that people can learn by observing the behavior is of others and the outcomes of those behaviors; people are often reinforced for modeling the behavior of others. Bandura, 1977 suggested that the environment also reinforces modeling.

Andragogical assumptions as implemented in the e-territory design supporting the study process.

The following assumptions were fed into the e-territory design:

1. *Adult learners bring previously accumulated experience with them to the learning environment.* The experience should be viewed as an important resource for both learners and facilitators (Knowles 1980) if a possibility is provided both for the learner and the teacher to draw on the heterogeneity within the group of the learners. However, the experience can also be a limiting factor and affect learning negatively through preconceived notions about reality, habitual ways of thinking and acting, and prejudices developed through life experience (Blondy, 2007). Therefore, direction of attitudes development should be to a greater open-mindedness. The teaching methods consistent with this assumption will be group discussions, collaborative assignment, projects. Consequently, the online learning environment should feature provisions for such activities and assignment. Emphasizing participation in group activities and team assignments as a necessary precondition of making the most of the learners' experience, L.C. Blondy highlights the importance of the learners underlying attitudes in doing so: *Learners must be willing to participate in class discussions and team projects during which they share their personal experience and knowledge and facilitators must create an environment in which learners feel free to express opinions, share ideas, and discuss information and experiences valuable for them* (Conrad & Donaldson, 2004; Ploff & Pratt, 1999; Palloff & Pratt as cited in Blondy, 2007) and further on *Collaboration between learners requires establishment of a safe environment where learners are not afraid to share ideas, experiences, and learning through conversation and exchange of information.* (Conrad & Donaldson, 2004; Ploff & Pratt, 1999; Palloff & Pratt as cited in Blondy, 2007). However, the ways to achieve such attitudes cannot be too straightforward. L.Blondy suggests "carefully constructed

discussion questions” (Blondy, 2007), and as concerns discussions concerning the course content “facilitator should craft question” for the discussion (Blondy, 2007). However, the ways to achieve such attitudes, which might require overcoming social or cultural differences, cannot be too straightforward. Modeling behavior through postings drawn from the teacher’s data base and exemplifying the appropriateness of such debates could create perceptions about the teacher-learner greater role symmetry in the higher-education context and encourage participation in such discussions. Discussion questions are posed regularly with the sample answers - actual responses to the questions elicited previously could facilitate participation, as well as established procedures requiring the students to post their comments regularly. The comments and posting should be in any language – English, Latvian or Russian best fitting the learner purposes, and the comment should be substantive, not simply “It is interesting” or the like.

2. *Adult learners are self-directed.* This is understood as that the adult learners are more capable of taking responsibility for themselves, and establish their own learning goals. However, the teacher should not assume that self-directedness is an inherent feature of adult learners, rather the direction of the development should be in the direction towards self-directedness. There are several implications of this assumption for the e-learning environment. The possibility to formulate own goals flexibly and find opportunities for activities appropriate to their skills level and learning styles within the course objectives (Hanna et al., 2000). In our case the learners were informed what activities will be acceptable within the confines of the course with the samples works and comment to them provided. Flexibility of the learner’s approach must be supported by the possibility to choose from the materials and task available to achieve the course objectives. Therefore a wealth of materials should be provided, as well as guidance and encouragement in the learning process, which might come from the teacher, the fellow students, and from the understanding that such approach fits well into the requirements and expectations inherent in the context.
3. *Adult learners’ motivation to learn is facilitated by internal factors.* In making decision concerning entering higher-educations adult learners might be influenced by some external

motivators, such as cultural and social beliefs, however Knowles (1984) viewed that internal motivators such as increased self-esteem, self-actualization, or recognition are essential in adult learners. Ose, 1999, expresses similar views concerning self-esteem needs and self-actualization issues in adult learners; Lieģeniece, 2002, Cross, 1981. The implications for the e-learning design should be in finding ways to provide the individual learners with acknowledgements that their contributions to the course are appreciated. L.Blondy suggests “Feedback from both the teacher and peers must be frequent and sincere to foster trust, mutual respect, and collaboration. (Blondy, 2007;). and adds that the learners should not feel “invisible or ignored” (Blondy, 2007).

4. *Adult learners are problem-oriented.* As a person matures his time perspective changes from one of postponed application of knowledge to immediacy of application, and accordingly his orientation toward learning shifts from one of subject-centeredness to one of problem centeredness. (Smith, 1996; 1999; Lieģeniece, 2002). The assumption deals with the applicability of knowledge, which is understood here as being relevant to the learners experience, personal circumstances and attitudes. However, the learners might not be clear about or able to identify what exactly they need to know (Bullen as cited in Blondy, 2007.) This fact highlights the importance of possibility to share information and to profit from other learners’ to expand one’s thinking, on the one hand and creating assignment which relevance can be readily appreciated by the learners.

Pragmatic research

Research design. Initial stages.

At the beginning stage of the research a questionnaire was administered to survey the students’ teaching-learning attitudes. The questionnaire was designed to evaluate how the students’ attitudes are consistent with the andragogical attitudes and approaches ensuring effective integration into university-level environment. The questionnaire was created based on propositions of D.Bluma concerning the directions of paradigm shift towards “innovative approaches” (Bluma, 1998). The findings thus elicited revealed the following:

- there was no consistency in the students’ ideas concerning either preferred teaching methods, responsibility for the learning outcomes, roles of the teacher and the students in the study process, or whether the requirements

and learning skills at the university level should be different compared to the students' previous educational experience. Almost all the sheets (of total 85) showed contradictions in answers to specially designed recurring questions measuring the same parameter. The overwhelming majority of students (68) also demonstrated that they are not willing or prepared to be actively involved in the decisions that affect them in their educational setting.

Structured interviews conducted by the teacher and involving students randomly selected from all the 10 groups also gave grounds for the conclusion that the students are not free from the educational experience where they were treated as dependent from somebody else's decisions. The students were entering the educational setting with the preconceived notions from their past.

Besides, the same structured interviews specifically designed by the teacher revealed a significant level of anxiety as concerns the process and outcomes of the study course.

Overall, the conclusions from the preliminary stages provided the grounds for the conclusion that transformations both in the students' learning attitudes and study skills will be required for their effective integration into university-level environment.

10 groups of undergraduate students (total of 127 students) working for their Bachelor degree in various areas of design participated in the research.

Overall the instruction can be described as *Blended learning* with regular face-to-face classes combined with the study support and extension in the teaching-learning territory.

The design of e-learning environment.

Design of the ICT based learning-teaching territory supporting the study process is central for the research conducted by the authors and expounded here.

The learning – teaching environment is called FORUM. For each of the two study courses separate area in FORUM was allocated consisting of several subdivisions. The subdivisions were as follows:

1. Study process. Materials and assignments.

The subdivision, also called “no-cover textbook” comprises texts specially selected for the WEB-designers and Interior designers accordingly, illustrations, exercises, tasks and assignments, specifically created for the professions in line with the state-of-art for English-for- professional-and-study-purposes courses. Postings from the teacher for the respective groups of students are regularly placed there.

The postings convey information on the course objectives, criteria of assessment, final evaluation, as well as the regular updates on the class work and home assignments. Additional exercises and workouts may be placed into this division at the teacher's discretion. The teacher is the moderator for the division; while the students enjoy the status of users only.

2. Students' work. This division is intended for the specimens of the students' actual works produced in response to the assignments. The student's works are both from the teacher's database compiled during a number of courses delivered over a period of time and currently produced. Both students' and teacher's comments are found here. Special care has been taken to include the works and comments, which might contribute to the formation of the “practical consciousness” as expounded above. Besides, the division is regularly updated. Similarly, the teacher is the moderator for the division; students enjoy the status of users only.

3. Questions and discussions. The division is meant for opinions and comments to be placed here.

Therefore, the design of the e-learning environment FORUM, also referred to as e-territory is intended to implicitly form and consolidate attitudes in line with the assumptions and processes of Andragogy. The assumptions and processes with the implications for the ICT-supported are examined with reference to L.C.Blondy, 2007.

Outcomes on the course completion.

1. On the course completion structured interviews were conducted. The questions concerned the general atmosphere, the clarity of the course goals, relevance of the materials to their profession, ability to make their own routes through the course materials, feelings of safety and general comfort versus anxiety and unease throughout the study process, peer - peer and teacher – learner attitudes. On the whole, the students expressed a high degree of satisfaction, varying from 9.4 to 9.7 in 10 point scale across the groups surveyed. Higher appreciation of the course is found in evening groups and the part-time group, which might be understood as experiencing deficiency of communication in other courses the students valued the e-support provided in our course and compensating for the shortage.
2. Research took the form of four case studies (Day Groups: Interior designers and Web de-

signers, Evening Groups: Interior designers; Part-time group of interior designers, total of 127 students) with the teacher continuously documenting the following data:

- *students' participation in the study process*: visits to FORUM, works produced in response to the assignment; comments and questions posted (students behavior, in conformity to the structures and resources)
- *students' evaluation of the task types and activities* (students' attitudes, tasks relevance, ability to set own goals)
- *self-reports on types of resources actually used*, incl. those additionally provided or recommended by the teacher (behavior)
- levels of clarity – confusion, safety/comfort-anxiety
- instances of individual behavior and attitudes
- instances of collective behavior
- learning outcomes based on the portfolio assessment

For the final assessment the students were to produce “Student’s portfolio” comprising the tasks and assignment compiled during the course. The structured requirements for the portfolio were posted in FORUM and allowed flexible approach to the tasks completion fitting the skills level and personal preferences. An example of the task: create an ad advertising Interior designer services to be place in the Internet etc. Other major requirements being to make a presentation, to present an individual work involving information selection, editing and presentation according to certain criteria etc.

Some findings elicited from the case studies

From 117 students in Day department required to make a presentation only 2 persons opted for individual presentations. The rest of the students joined into groups sharing the activities and responsibilities effectively identifying the strengths and weakness of each member of the group.

Of all the students from all the groups only 4 persons failed to meet the requirements for the course for various reasons. All the persons were from the part-time group of interior designers. Later two of them enrolled on the course for the second time.

Some instances of *individual behavior* were remarkable: a students provided a file with translations of all the texts into the Latvian language (which is quite a sizable job), and all the tasks completed to be placed in the FORUM for the benefit of the next generations.

Some students volunteered to improve the illustrations provided for the pictures tasks by the teacher (found better, more impressive and relevant).

In a number of cases the students exceeded the teacher’s expectations, improving the structural schemes suggested for the individual works, demonstrating remarkable ability to explain, persuade, clarify some issues to the peers and doing so on their own initiative. Many were also quite willing to set examples and serve role models for the groups mates.

The findings from the case studies allowed us to make the following conclusions:

The students’ behavior demonstrated during the study course allows us to make the following conclusion: during the study process the transformations in the students’ attitudes have been in the direction of

- from individuals idea of how the school should operate towards shared norms and values
- from isolation into competing individuals towards collaboration and collective shared responsibility
- towards learning from others and shared concern for the quality improvement in structures and study materials
- towards more confidence about one’s skills and objectives
- towards more clarity about the requirements and attitudes they might encounter at the university-level studies.

Those transformation are in line with Ch. Bezzina’s suggestions concerning what should be required from the individuals to adjust to and be included into a broader social context of learning communities and life long learning. (Bezzina, 2006) and M. Whetley observing that “education becomes a moral act” expected of a self-actualized value-oriented personality (Whetley, 2004).

Conclusions

Structuration perspective or understanding how human action is guided and created by the underlying “practical consciousness” provides opportunities of pedagogical interventions through introducing virtual actors and modeling the target behavior thus enabling the students witnessing the behavior to implicitly create perceptions about group organizational culture, group norms, what is expected from them and how it can be translated into their activities.

ICT-based environments supporting study process at the university level carry the potential to facilitate the transformations in the students’ attitudes underlying the behavior ensuring effective integration in the context of university education.

ICT-based environments supporting study process at the university level carry the potential to make the learning-teaching experience more favorable and rewarding.

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