

PSYCHOLOGICAL AND PEDAGOGICAL PROBLEMS OF DISTANCE EDUCATION FOR ADULTS

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Abstract

Our main focus is to highlight the most important challenges in distance education aimed at adults: specific psychological challenges coming from adult development, the problems of quality and evaluation, and the effect particular distance education forms and their content (interactivity, salience, and multimedia additions) have on adult learning. In the opening section, theoretical grounds for how adults learn, treat learning, how they function in informational stress and in the role of a pupil are presented. This is then followed by the discussion of pedagogical aspects (motivation, self esteem etc) of results evaluation and didactical difficulties of planning high quality distance learning. Finally, a review of research results into how different types of material content affects adults' perception and comprehension and how retention and transfer are influenced in effect. In the summary, we move on to discuss how b-learning (blended) and c-learning (complementary) could be employed in order to facilitate adult distance learning and propose research fields to explore in this area.

Key words: *adult education, educational psychology, e-learning, b-learning, quality and evaluation in distance education, adult development.*

Introduction

Adult education, and especially distance education aimed at this age group is still more of a *terra incognita* for the more experimentally oriented psychologists and pedagogues than a system of proven regularities and rules. The main reason for this is that, in recent years, the way of thinking about how adults learn (or even function cognitively) changed rather dramatically. Gone are the long-held beliefs about unavoidable declines in all cognitive areas and increasing mental stiffness, making teaching adults an almost impossible task. Instead, more and more ideas are being put forward suggesting that an adult might be just an apt and motivated learner as a younger pupil. This shift in approach to adult education, although already exercised by many educational centers across the world, has not yet filtered down from theoretical thinking to systemic research plans or research paradigms. The separate research fields that brought about the changes remain just that, separate. The need for the development of a whole new educational theory seems to be presenting itself, especially in the face of the fact that distance learning technology keeps developing rapidly, leaving little time for systemic reflection. Developing such theory might turn out to be one of the most challenging tasks for educational psychologists and

pedagogues alike in the nearest years.

In this article we attempt to present the Reader with three theoretical insights into how adult education should (at least in our shared belief) be seen, planned and assessed. As shy as such theoretical presentation might seem, we believe this is the level at which the research thinking should begin and we hope to provide at least a small stepping stone, or perhaps an inspiration, to the researchers who wish to explore the area.

What Makes Adults Learning Specific? The Changes in Thinking about Adult Cognitive Development in Recent Years

In contemporary learning psychology, cognitively oriented psychologists assume the leading role (Shuell, 1993, Good i Brophy, 1995, Przetacznik-Gierowska, Włodarski, 1998; Dryden i Vos, 2000). The differentiating factors of this orientation are: the characteristic approach to understanding the essence of teaching and learning, and exploring their dynamics, effectiveness and conditions in an individual's lifespan. Every life situation is a good opportunity to learn – the claim is repeated by many well-known authors, stressing the importance of both institutional and non-institutional education (Faure et al., 1975, Drucker, 1999, Delors, 1998). For this reason organizing complex learning processes requires also taking into account various life contexts, e.g. the development of technology (Bruner, 2006), and this in turn inspired a large area of proposed (and realized) studies to focus on the possibilities of employing information technology to enhance education in all of its stages (Delors, 1998, Drucker, 1999, Morbitzer, 2007).

The thinking of learning and teaching is based on the main thesis – formulated in the early decades of the previous century – claiming that an individual's development keeps progressing during their entire life, creating opportunities for learning regardless of actual age. This thesis is further expanded by proposing that the peaks of human functioning are reached at different ages for different areas of functioning. Creative activity, requiring a foundation of knowledge, skills and wisdom, is an example of an area in which the highest levels of performance are reached in the later stages of life. This assertion – formulated by the representatives of life-span psychology – is easily found nowadays in many psychological and pedagogical handbooks (Banach, 2000; Kielar-Turska, 2000; Harwas-Napierała, 2000; Trempała, 2000), although its reception among the so-called non-professional circles is rather weak.

The main reason for this is that there is a dominating belief in 'popular knowledge' that there exist cognitive barriers in learning tied to growing age. This isn't the only one of such 'urban legends' (otherwise called educational myths), one other of exceeding popularity is the one explaining learning as a process chiefly based on information absorption, engaging memory as the main cognitive function (Ledzińska, 2008). Meanwhile, in psychological terms, learning is defined as a process of getting to know oneself, the world and the position of oneself in the world, taking place as a result of mental effort. This effort – cognitive activity – covers not only perception and memory, but also various forms of thinking developed during different stages of life (Brown et al., 1983, Anderson, 1998, Ledzińska, 2000, Eysenck, Keane, 2005).

The scientific definition of learning diverts from many other popular claims, among which the claim of directive steering of learning stands apart as a predominant one. Such steering, directing the learning efforts, is only justified in relation to younger pupils. However, even while organizing – at the early stages of the schooling process – the learning of children, the prospect of their future competences to independently steer their own learning needs to be taken into account. This subjective competence is referred to by psychologists as 'autoregulation in learning' and defined as the ability to plan learning, monitor its progress and assess its results. The main goal of educational actions can thus be defined as reaching students' cognitive independence, as one of the factors of autonomy, subjectivity (Shuell, 1993, Schunk i Zimmerman,

1994, Boekaerts, 1997, Pintrich et al., 2000).

Moving on to the main issue of the article, the education of adults, the complexity of the matter, mainly due to the age differences (range) of studies' respondents needs to be signalled. The resulting need to take into account the results of time psychology studies is coupled by the need to consider the conclusions of studies devoted to exploring psychological development in adulthood. The main thesis that needs to be expressed here is that, in planning adult education, there is a paramount necessity of an insight into knowledge of ontological changes in cognitive functioning specifics.

In earlier writings on the subject of psychological changes during lifespan the dominant reflection was rather on the scope, type and reasons for such changes. Newer publications present readers with the possibility of moving outside that frame of thought (quantity analysis of performance levels) – especially measuring what and how fast can be learnt by an adult person. The most radical approach suggests (Trempała, 2000) abandoning the idea of finding a generic 'trajectory' of changes in cognitive development with age. Instead, the need to identify the functional changes is presented. One example of this chain of thought is the conviction that the changes in the cognitive sphere – happening with age – depend on the performed tasks and environmental demands or, from a broader perspective, the influences of the environment in which an individual functions.

Moving on to the specifics, the ascertainment that ageing, and in particular psychical ageing, takes place, and the peak of mental ability occurs around the middle of the third decade of life needs to be made. During the fourth decade the decline in mental function in chronological advance (physical time) – as in the case of all psychological principles, statistical in character – becomes more and more visible. The physical aspect of time, although most readily apparent, is not the only one however, psychical and historical-sociological aspects also need to be considered. Ageing and degeneration are not only a result of the passing of actual time but also of the experiences an individual gathered. Ageing in general is a selective process, rarely becoming global. It is prone to compensation mechanisms, which is most clearly exemplified by selective optimization phenomenon. It occurs when certain people, despite the passing of time, remain very active in selected fields – arts, politics or science. In the case of scientists for instance, a confirmed (regardless of their particular field) regularity of decreasing fluid (innate) intelligence and an unchanged, or in some cases growing, crystallized (developed in the course of activities) intelligence, all points to considerable development reserves. In more general terms, the popular belief that the decrease in cognitive functioning has a broad impact is false – instead it is usually only short-term memory that functions less well. 'I can easily recall events from many years ago, but I have trouble telling if I locked the door on my way out today' – is a common complaint from adults, alien to the younger generations. The considerable pace of changes happening around us, including the omnipresence of technology, puts many adults (especially older adults) in an uncomfortable position, leaving them with feeling of being seen as 'not following the reality'.

In the light of psychological knowledge, adults not only can learn, but should undertake learning activities as one of the key factors to psycho-physical health. They require however, as learners, individual approach, taking into consideration psychological and learning specifics of their age, which can be put together as follows:

- eliminating fear motivation and overcoming forms of resistance ('I don't think I can do it, it's too late for me');
- spreading the process of acquiring new content and skills in time;
- attention to solidify newly acquired information not only during learning, but also after it;
- calling on previous life experiences and knowledge to aid comprehension;
- rewarding progress both on individual and group level.

One of the too often-made mistakes in adult education remains the ignoring or misinterpreting of the rule of learning individualization, one of the fundamental imperatives in learning psychology and pedagogy. To individualize means to adjust the content and the form of educational influences to fit the dispositions of all learners, not only particular groups (for instance of learners of high intellectual ability or special talents). The knowledge and skills in this area co-determine the competences of teachers and the effectiveness of their efforts.

The Challenges of Gathering and Interpreting Evaluation Data from Adult Distance Education

The issue of the quality in e-learning is crucial for the dynamics of its development, in particular in the case of academic education (Mischke, 2007). In the dictionaries 'quality' is defined as a trait that makes an item or service simple 'good', but it can also be defined as compliance with expectations or demands (Crosby, 1979). This standpoint allows for a rather uncomplicated measurement of quality and results in some experts avoiding more specific definitions. It is worth noting however, that in many cases quality, as an umbrella term – in opposition to the Latin *qualis*, which simply meant 'of a given kind' – became abstract and difficult to operationalize. Various approaches to the problem stress the issues of time perspective, process, scope or the possibilities of fulfilling individual needs in assessing quality. Combining the above difficulties with the manifold area of education, and with the (still difficult to fully comprehend for many adults) virtual reality gives an insight into the complexity and the number of problems that those dealing with distance education quality need to face.

Traditional didactics put a lot of stress on the matter of perfecting the processes of learning and teaching (Pólturzycki, 2002, pp.379-389). The tools and methods were constantly developed for improving the quality of both grading and evaluation, understood as a process of systematically gathering knowledge about activities, characteristics and effects of programs, teachers and educational processes – used later to improving all those but also to make further decisions. Certain means of evaluation, also called control, were used to facilitate the planning steps, but also the execution of a form or a cycle; and to summarize their results. They delivered information, which 'accepted and analyzed consciously by teachers influenced their level of work, enhancing it and developing it, eliminating the flaws and drawbacks, making the process of learning happening more in its own natural course, enriching and diversifying the forms and methods of teaching' (Pólturzycki, 2002 pp.388-389). The arrival of e-learning brought about new questions and dilemmas in relation to the quality of learning and its results. The experiences reported by Universities across the world suggest that there is a large potential of newly-created possibilities coupled by the possibility to upkeep the high standards of teaching. Such positive feedback stimulates the development of e-teaching both in academic distance education (Zajęc, Stanisławska, 2009) and in its other forms and types (Thorne, 2003). New ideas of combining e-learning with more traditional approaches have also recently been presented (Czarkowski, 2009).

The fundamental element of the process of evaluating e-learning, much like in the case of traditional learning, is setting the standards for evaluation procedures, mainly by isolating the criteria that will serve as the basis of any assessment of a program, a platform, a lesson or, from a different perspective, the teaching content. The key questions that are raised in relation to e-learning seem to be:

- what elements decide the value of a course, or influence that value in a significant way?
- what forms of evaluation should be used?
- who is entitled to prepare or/and execute the evaluation procedures?

A proposition in this area was created by Polish Association of Academic E-learning

(SEA). According to the ground rules of social constructivism assumed by SEA the criteria used by institutions and individuals to assess the quality of Internet courses need to be commonly accessible and free of charge – for both the courses currently available and prepared in the future. They can also be helpful to those who are in the planning stages of introducing e-learning, pointing to the key areas determining the quality of distance education. According to the proposition put forwards by SLE, e-education should be assessed based on the following four areas:

- organization of the course
- preparation of the course
- execution of the course
- evaluation of the course.

SLE suggests assuming various points of view during the assessment: technological, didactical or even the availability of the course.

The introduction of e-learning requires also the introduction of highly specialized, highly interactive tools designed to help evaluate it. Modern information technology allows for multiple forms of evaluation, in consequence leading to the improvement in the work of a teacher – and in the same time in the whole educational process. Possibilities exist for overseeing evaluation processes of practically any given complexity, which means better coordination and reduction of undesired occurrences and costs. One example of such tool is the famous MOODLE platform, offering multiple ready-made tools for the assessment of evaluation of education processes. The most important of those are the ‘Quiz’ for learning effects evaluation and Questionnaires designed to perform initial and results evaluation.

Other tools available on MOODLE can also easily be employed as sources of evaluation information, like discussion forums or class registers. In particular, the forums used for discussions enable individual grading of posted messages by every user – properly moderated forum can become a valuable source of information about the preferences and views of the participants of any (stationary or distance) course. Registers are a form in which the students are, among other functions, allowed to send private messages to the teacher, containing their opinions.

Moodle also allows for statistical analysis of the gathered data and offers various ways of presentation of the results, a tool often left unused by many educators.

In the view of the fact that easy-to-use tools for gathering and processing many kinds of feedback are readily available, the question, from the initial *if* and *whether* we could proceed with evaluation on-line, becomes rather *what* should be the structure and content of the data gathered. As mentioned above, the theoretical problem of pinpointing the crucial qualities of distance education courses – and the even more serious practical problem of operationalizing those qualities into questionnaire items – has only just begun being solved.

The Reception of E-learning Material by Individuals as a Research Problem

The arrival of the Internet, and with it education delivered ‘over the cable’, brought many answers to the problems of ‘traditional’ education. Simply put, it allowed for one-to-one tutoring, so richly advertised by Bloom’s followers (Bloom, 1980, Krathwohl, 1998), to take place in a very comfortable way. It gave students freedom and it let them create their own learning environments.

However the fact was that e-learning, while making it possible to maximize the individualism of the learning process, presented researchers from both the field of pedagogy and psychology with an array of questions and difficulties. In psychology, they were mainly focused on the issues of attention guiding (Jamet et al., 2008) and cognitive load experienced by the students (Mayer, 2001, Moreno, Mayer, 1999) while pedagogy addressed more systemic matters of student support, help-seeking and the whole structure and didactics of e-learning (e.g. Tanaś, 2007).

In the area of attention guiding, an article by Jamet, Gavota and Quaireau (2008) reports and discusses the findings of a study on how various types of attention guiding means affect retention and transfer. Two types of often used attention guiding techniques were tested in the study, sequential vs static presentation (parts of a picture either ‘popped’ on the screen in a sequence to illustrate the spoken – recorded – presentation, or the picture was present as a whole during the presentation) and salient vs non-salient presentation (parts of picture either colored red when spoken and then turned gray about or remained gray during the whole presentation). This allowed for a 2 x 2 matrix to be formed for the purposes of statistical analysis. The results of the study indicated that while salience (highlighting of the objects) indeed has significant effect on the understanding and retention of the material, sequentiality’s impact is not clear – in some tasks it seemed important, in others the order in which parts of the picture were presented was irrelevant. This was explained by the authors by the presence of the spoken explanation (the study measured the effects of a computer-delivered lecture) – which was said to eliminate the need to guide attention chronologically with visual clues by guiding it with spoken clues. Another interesting finding of the study was that no effect for transfer tasks (applying the newly gained knowledge to new situations) was observed for either salience or sequentiality, although there is data available that indicates quite the opposite (Craig et al., 2002) – an interesting hypothesis that attention guiding might indirectly (negatively) influence comprehension remains to be tested.

Another study, comparing the effects of interactive and non-interactive pictures on the efficiency of learning, was reported by Rasch and Schnotz (2009). Groups of students were assigned a text to learn, in four groups coupled by interactive and non-interactive pictures that illustrated the text, in the fifth group the text contained no pictures at all. The results were rather baffling, as they indicated that adding pictures to the text was neither beneficial nor harmful to learning – the students’ interactions with the texts were different based on what pictures were used, but the outcome of learning remained the same. Moreover, pictures proved to be harmful to the efficiency of learning. The results of the study contradicted both the well-established multimedia *principle* (that multimedia means more effective, Mayer, 2001) and the redundancy rule (Sweller, 2005) and the ensuing discussion only served to highlight how tricky and unclear the ground is for practical planning of teaching materials.

A study into how the freedom of choice in shaping the learning environment affects the effects of learning was presented by Segers and Verhoeven (2009). In the study of a group of children assigned to either complete webQuests (directed search of the Internet) or do a free-search (Google, Wiki) the authors tested their hypothesis that cued research would lead to better learning results. Indeed, after filtering out individual conditions (generic linguistic and specific writing skills, but also information processing-influenced learning gains), the authors proved webQuests to be more effective, albeit only for boys.

The aspect of information processing (dealing with information overflow), cast aside in the previous study as ‘individual disposition’, and therefore not related to the structural research conducted, was made the key point of an extensive study reported by Ledzinska (2009). The study on a very large group of students showed that information processing, or coping with information overflow in broader terms, is a crucial factor for how information is processed, retained and used – the importance of information processing grows even more as increasing amounts of information are produced and delivered ‘into’ the society, and with it, into the schooling system. This is an aspect of learning so far overlooked by most researchers, who focused more on how *e-learning conditions* affect its effectiveness, not on how *e-student conditions* do that.

The evidence from those psychological studies, pointing towards the problem of students’ inability to cope with actually being made responsible for the large part of their learning conditions – be it as a result of the inadequacy of the teaching techniques employed or the

inadequacy of students' processing, is further supported by studies more pedagogical in their approach. Research into how students deal with this increased load of responsibility (and if they deal with it at all) was conducted by Mercier and Frederiksen (2007) proving that not only task-related, but even help-seeking behaviors in solving complicated tasks are a complex, strategic cognitive process which, to many, does not come naturally. An analysis into how science exhibition visitors acquire knowledge was presented by Knipfer et al. (2009). The authors suggest that while technology is a very effective tool for knowledge transfer in science museums, it mainly inhibits only one of the three pathways believed to partake in such transfer – namely *museum-to-visitor* path. On the other hand it makes the second path, *visitor-to-visitor*, much harder to become activated. This in turn means that while technology allows for the knowledge acquisition, it might negatively impact (Walter, 1996) the interactions that lead to knowledge comprehension. This directly corresponds with the view (eg. Katra, 1995) that for an event (experience or chunk of knowledge) to gain significance, that event needs not only to be 'lived through', but also reflected upon, and then spoken about to others (interaction).

A growing number of research reports and meta-analysis led many scientists involved in e-learning (Mc Cullough et al., 2006, Tanaś, 2004, Gajda et al., 2002) to believe that the sudden shift in control over the learning process, although beneficial from Bloom's theory's perspective (as it allows the student to compensate for possible cognitive, affective (motivational) or psychomotorical deficiencies by changing the structural conditions of learning) also created a number of specific difficulties, coming from what was originally considered the upside of the whole idea – the lack of rigid rules, the lack of controlling teacher, the lack of conditions forced upon the students. E-learners, in many cases, are simply neither ready nor even aware of their lack of readiness to take control over how, what and when they learn.

The concept of b-learning originates from the above conclusion (Graham, 2005, Young, 2002). It is a concept in which the distance learning's benefits are combined (blended, hence the name) with the advantages of direct teacher-student interaction. Its initial aim was to put together the techniques employed in e-learning and those employed in traditional education, requiring the presence of a teacher. Very soon however many authors (e.g. Osguthorpe, Graham, 2003) concluded that a simple combination of those would not address the difficulties of regular e-learning. Instead, a proposition to redefine the role of a teacher in b-learning (and possibly the role of a teacher in general) was made (Ward, La Branche, 2003). In the light of this proposition, the name b-learning becomes a little misleading.

Complementary learning, as many authors now call it, is a concept in which the teacher assumes a two-fold role. In relation to the teaching material delivered via the now (at the risk of sounding paradoxical) 'traditional' e-learning, the teacher becomes a guide, leading the student through the material, assisting in organizing it, finding learning tactics and fusing the newly acquired information with the existing body of knowledge. This directly addresses the psychological-level troubles students have with information overflow and the inability to organize it presented by Ledzinska (2006). In relation to general experience of information overflow, its availability on one hand and uncertainly of their source and value on the other, as well as to address the difficulties with self-motivation, self-control and the need of a student to create their own learning conditions, the teacher becomes a coach. That coach's role is defined, in opposition to the traditional teacher's role of a source of information (in a broader view, a source of judgment and values too), as that of a trainer of the ability to deal with information coming from elsewhere, to self-motivate and to control one's progress.

Helping students to cope with psychological consequences of information stress (extensive study by Ledzinska, 2009): disorientation, inability to integrate the acquired information into the already existing body of knowledge, the feeling of possessing only outdated (and therefore useless) information, being unable to tell important knowledge from the trivial one and the negative emotions stemming from all those – also adds to the possible tasks of such a

'redefined' teacher.

B-learning, and especially its enhanced version, complementary learning, seems to be the cutting edge of today's distance education. However, while providing solution to a lot of difficulties of more traditional approaches, they at the same time force upon their followers rather dramatic changes in what we grew to consider 'normal' teacher behavior. What the 'new' teacher behavior should be, and in fact what the 'new' teaching content should be, is far from established.

Summary

Regardless of which stage of a teaching process aimed at adults the strobe lights fall on – be it its theoretical foundations, content preparation, or the evaluation of results, problems emerge for a keenly observant scientist. They have both theoretical and strictly practical backgrounds. The problems with theoretical thinking stem from the fact that it changed quite dramatically in the recent years, from the assumption that adults' unavoidable mental deterioration condemns them to be poor learners. The practical aspect of the problems comes simple form the fact that, while distance learning paradigms (e-, b-, c-, m-learning) develop rapidly, there is really very little time to reflect upon their efficiency, let alone perform a systemic research into it.

Perhaps a text like this one, highlighting the shortcomings of the current distance education situation in as a conscience way as possible, could potentially inspire a larger, broadly-planned program, addressing the problems of each teaching process stage. We believe this necessity will present itself as clearer and clearer in the future the more neglected it is now.

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