

## **How to prevent the Internet from forming “shallows” in our brains?**

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A rhetorical question posed by popular contemporary American writer Nicholas Carr in his recent bestseller “What Internet is doing to our brains: THE SHALLOWS” (2010) is worth of the attention of the electronic educational materials designers, though the book is addressed to the general public, not to the specialists in using computers in education. It touches upon a burning question of how to design good Internet courses and prevent the Internet from forming “shallows” in our brains.

One of the first most prominent specialists in computer-assisted education in Ukraine Y.Mashbitz, to whose 85-th anniversary this conference is dedicated, warned long ago, that only an adequate reflection in the techniques designed for the computer-assisted instruction of the regularities of the authentic thinking, pertinent to the *experts* in the field, can make this new type of instruction worthwhile.

But quick clicking to the endless sources of information available in the Internet in a hasty search of answers to the questions which require “thinking slow, but not fast”, paraphrasing the title of another bestseller “Thinking fast and slow” (Daniel Kahnemann, 2010), can probably, indeed, form shallows in our brains.

So, the objective of this paper is to alert the colleagues in the field of computer-assisted courses design and the state educational authorities that are prepared to allow granting state diplomas to a quickly growing number of Institutions of Distance Learning of the danger to get specialists with shallows in their brains. Only thorough expertise of the distance learning courses, the requirements of which should be widely discussed and agreed upon, must precede announcing the distance learning opportunities of the state level.

We have identified the fundamentals of these requirement partially reflected in our book “The humanizing potential of using contemporary technologies in education” (Arshava I.F., Nosenko E.L., Salyuk M.A., 2013). The major idea of the approach to designing distance-learning courses can be summed up as follows. There exist some specific regularities of the *experts knowledge* structure which have been crystallized in the course of the multicentury-long history of cognition. In brief, they reflect two fundamental cognitive operations the learners perform in the course of knowledge acquisition: those of the simultaneous *integration* and *differentiation* of the concepts (categories) of the corresponding field of knowledge making a unified system. The concepts are arranged in the expert’s knowledge base both hierarchically and linearly, the former representing intraconcept relationships (synonymic, antonymic, paronymic, hypero-hynonymic and the like) and the latter - interconcept relationships (attributive, causal, temporal, spatial and the like).

In designing teaching material for distance learning courses the basic concepts of the field (“advance organizers”, Ausubel, 1985) are to be presented to the learners in the corresponding sequences and in a multitude of forms of their mental representation: imagery, graphic, symbolic, metaphorical and others. The exteriorization of the three major knowledge bases of the experts: declarative, procedural and executive ones in a specifically designed system of assignments stimulates the formation of the corresponding cognitive structures of the learners interiorized in the form of the metacognitive competence. It is the metacognitive competence that makes learning tasks performance effective. The use of the contemporary educational technologies can make the process of instruction successful if it reflects the above described regularities of knowledge structure pertinent to the experts in the field. The empirical findings obtained by the authors showed that the university-level students exposed to developing their metacognitive competences in accordance with the principles, stated above, demonstrate longer knowledge retention, the effects of information transfer and higher level of proficiency.