

Possible Negative Impacts of Intelligent Learning Systems on the Development of the User's Identity

G. Yalamov^{1,a*}

¹ Institute of Education Management of the Russian Academy of Education, 16 Zhukovskogo str., 105062, Moscow, Russia

^a geo@portalsga.ru

* Corresponding author

Keywords: intellectual training system, intellectual educational technologies, domain model, destructive and negative impacts, psycho-physiological portrait of the student, didactic dialogue

Abstract: The article examines the current state of intellectual learning systems as an information communication technology of education that can have some destructive effects on the development of the cognitive or cognitive qualities of a student's personality. The research clearly demonstrates the possibility of such effects and conditions indicated under which they can be exerted on the student's personality.

1. Introduction

Currently, the effectiveness of educational and cognitive activity based on the use of intellectual training system (ITS) is undoubted. Modern integrated ITSs, capable of simulating the learning process to one degree or another, are focused on the implementation of such technologies as [1; 2]:

- Course sequencing;
- Intellectual analysis of student responses;
- Interactive support in solving problems;
- Problem-solving assistance based on examples;
- Control of the student's current knowledge based on the intelligence of his answers.

At the same time, the goals of learning are to increase the level of learning and the achievement of certain skills, the development of intelligence or *the formation of personality* [3], and ultimately, teaching the student to think independently.

Nevertheless, in our opinion, a whole series of questions, conditioned by the specifics of using ITS to achieve the objectives of learning, are not well understood. In particular, the question of possible destructive influences on the development of the personality of the learner in the learning process that is technologically organized on the basis of ITS has not been studied. In this regard, the purpose of this article is to determine whether negative impacts from ITS on the development of the cognitive personality traits of a student are possible, under what conditions they can be exerted.

2. Materials and Methods

A number of methods were used to achieve the goal of this article: analysis of pedagogical and psychological literature to study the state of the problem; comparing different views on it; induction and deduction to determine the causal relationships between the processes of ITS application and the occurrence of destructive influences on the development of personality; synthesis.

3. Results

Information technologies not only change the very essence of the activity connected with them, but also have both direct and indirect effects on a person's personality [4]. N. Wiener pointed out that the technical means used by society in certain types of their activities have a certain influence on the prevailing ways of thinking

that provide the level of mental development. All processes of communication and control in nature, as well as machines, are essentially the processes of transfer, storage and processing of information. Information includes a substantive (in ITS, it's a domain model) and representative components. The content component of information reflects its essential aspect, connected with the reflection of reality. The representative component determines the form of presentation of information for transmission, ensuring its adequate perception by the consumer [5]. In ITS, this can be provided by a friendly user interface and methodically sound visualization and auditing of information transfer forms.

Educational and cognitive activity, carried out with the support of high-tech tools, including ITS, is accompanied by information transfer processes to the learner, which absorbs the latter and uses it to choose the right behavior. In essence, the feedback mechanism (direct and reverse transmission of information) is implemented in ITS. Feedback provides corrective training effects on the student, in which his behavior is controlled by the amount of deviation in his position relative to some learning goal. At the same time, the "found" ITS solution may not meet our expectations. The main problem here is the creation of an algorithm for accurately predicting the result, taking into account the input actions, which has not yet been solved. In addition, the situation is quite possible when the available learning impact of ITS, limited by their recruitment, is not adequate to the current model of the student and his psychophysiological portrait [6]. As shown in [7], methods of forming models of students and knowledge bases of subject areas in existing ITS do not provide for the division of educational content into didactic units of predefined types. Individual learning strategies do not take into account the optimal dosage of knowledge and exercises by the teacher, depending on the abilities and cognitive abilities of the learner, the speed of remembering and forgetting knowledge, the stability and duration of his active state. In such conditions of training, the possibility of an overdose of knowledge, stress and negative psycho-physiological consequences of the educational and cognitive activity of the user of ILE would be wrong to exclude [7].

Note that the ITS was originally designed taking into account the level of development of technological and software that limits their capabilities, often without a pre-developed plan. The methodical and didactic component at the same time was of secondary importance, if not completely ignored. This trend in the development and design of ITS and their prototypes persists to the present. The problem of automating the long-term and labor-intensive process of manual filling of educational material (a domain model), forming the basis of any ITS, remains relevant. All this complicates or hinders the purposeful use of ITS in managing the educational process in accordance with the required principles of didactic systems [8].

Thus, questions remain open. To what extent is the learning process, implemented by modern operating ITS, fully capable of achieving the above learning goals? Has the use of methods used in traditional education to create the conditions for the implementation of the didactic dialogue [5] of the learner with ITS? How does the process of acquiring knowledge of students in the information environment, which can acquire the character of a second, subjective reality in the absence of direct contact between the teacher and the student, traditional lectures and seminars for him?

All of the above suggests that in the process of automated learning, technologically organized on the basis of modern ITS, certain destructive effects are possible both on the learning process itself and, as a consequence, on the development and formation of the user's identity, i.e. the student.

4. Conclusion

So, the consequences of using ITS can be both positive and possibly negative. In general, the effectiveness of their application is confirmed by both the practice itself and research in this area. However, the assessment of the effectiveness of a technology cannot be approached one-sidedly, especially if they affect the learning process. At the present stage of design and development of ILE, the need to create a unified prototype of such systems that satisfy certain scientifically grounded didactic and pedagogical-technological requirements for their functioning is obvious [2]. However, these requirements are developed without taking into account the possible destructive effects that are the subject of this article. When designing the use of ITS in the educational process, all possible direct and indirect effects on the student's personality, which determine its development, must be analyzed.

5. Acknowledgments

The article was prepared within the framework of the state assignment on the topic “Development of Informatization of Education in the Context of Information Security of an Individual” (state registration № 14.07.00.20.01.04).

References

- [1] Yurkov, N. K. (2010). *Intellectual computer tutoring systems: monograph*. Penza, Russia: PSU Publishing House.
- [2] Yalamov, G. Yu., & Shikhnabieva, T. Sh. (2018). *Intelligent adaptive information systems for educational purposes*. In A. Arinushkina, S. Neustroyev, and Yu. Fedorchuk (Eds.). Proceedings from ICEDER 2018: International Conference on the Development of Education in Russia and the CIS Member States. *Advances in Social Science, Education and Humanities Research*, 288, 26-31.
- [3] Demyanov, A. V. (2006). *On the issue of the implementation of a training model in an intelligent computer-based learning system*. In proceedings from scientific-practical conference: *Innovations in the conditions of development of information and communication technologies* (pp. 257–259). Moscow, Russia: MIEM.
- [4] Zakharova, I. G. (2003). *Information technology in education: A manual for students of higher pedagogical educational institutions*. Moscow, Russia: Akademiya Publishing Center.
- [5] Wiener, N. (1958). *Cybernetics and society*. Moscow, Russia: Foreign Literature Publishing House.
- [6] Nosenko, E. L., & Chernyshenko, S. V. (2018). The didactic dialogue is a key element of the distance learning course. *Pedagogical Informatics*, 4, 107-116.
- [7] Yalamov, G. Yu., & Shikhnabieva, T. Sh. (2018). Adaptive educational information systems: approaches to intellectualization. *Man and Education*, 4(57), 84-90.
- [8] Latyshev, V. L. (2004). *Theory and technology of creation and application of intelligent tutoring systems: On the example of training and raising the level of skill in the field of computer science of technical university teachers* (Dissertation). Moscow, Russia.
- [9] Churakova, R. G. (2001). *Didactic system of L. V. Zankov. Problems and prospects*. Moscow, Russia: ANO “Center “Developmental Education”.