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Self-organisation of students' activity as a condition of effective electronic educational communication

Summary

SELF-ORGANISATION OF STUDENTS' ACTIVITY AS A CONDITION OF EFFECTIVE ELECTRONIC EDUCATIONAL COMMUNICATION

The virtual environment allows solving new educational problems, but also generates new educational, psychological and pedagogical effects, new experience.

E-learning, like traditional learning, is realised with the help of three most common technologies: self-learning technology; one-to-one learning technology; one-to-many learning technology. At the same time, e-learning interaction involves self-organisation of the individual and the organisation of joint distributed activities of students. Self-organisation of the individual is understood as the ability to structure personal time, tactically plan own activities, purposefully act in solving problems. The effectiveness of educational activities of students in the conditions of e-learning depends on how students are guided by their own internal principles, the ability to create conditions for the optimization of learning tasks and actions.

The article presents the results of theoretical and empirical research of self-organisation of the individual in the context of effective distribution of time resources, describes the psychological strategies of network activity of students, highlights the features of educational styles, levels of psychological efficiency of interaction with information technology.

Key words: self-organisation of activity, network activity, educational style, psychological efficiency

Introduction

Currently, the system of Russian university education is actively implementing virtual educational environments that allow solving various problems: teaching, organising independent cognitive activity of students, managing the pedagogical process.

E-learning, like traditional learning, is realised with the help of three most common technologies: technology of self-learning, technology of "one-to-one" learning, technology of "one-to-many" learning.

In the first case, the interaction of the student with educational resources with minimal participation of the teacher and other students (self-learning). In the second, there is an individualised teaching and learning, organised relationship of one student with one teacher or one student with another student ("one-to-one" training). The third technology is based on the provision of teaching material to students by a teacher or an expert ("one-to-many" training).

Network educational activity of students is represented by different models of interaction. Interpersonal interaction is carried out through correspondence, "groups", electronic presentations, electronic mentoring. The second type of interaction is the collection of information, which includes: exchange of information, creation of databases, electronic publications, TV tours, joint data analysis. The third type of information search, collaborative writing e-texts, simulations, social action (Harris 2003: 77–78).

The virtual environment allows to solve new educational problems, but also generates new educational, psychological and pedagogical effects, new experience.

Problem statement

Of particular importance is the analysis of the problem of personal determinants of communication (Filipkowski & Smith 2012). Virtual space extends the

boundaries of personal freedom, creates conditions for self-expression, self-presentation, self-development. But there are problems related to informational-psychological safety of personality (offset identity, creating an unrealistic image of "I", the threat of the levelling of individuality of personality) (Dunn 2013; Westaby, Pfaff, & Redding 2014).

The development of network resources replaces interaction with reality. Cyber creates the conditions for new patterns of behaviour, for stereotypical new activities. Virtuality of space, time, social relations form special individual-personal manifestations (Sungurova 2017: 54).

Students are faced with increasing information loads. Involved in network communication, they become "consumers" of the content of various information resources, where information is given in a structured and formalised form, does not require independent processing, analysis and additional understanding.

Systematic and long-term use of information technology leads to other ways of processing, analysis and presentation of information. As an example. One of the new methods of independent work is authorisation, which acts as a process of transformation of an ordinary text document into a hyperdocument, i.e. work with the document, but taking into account the culture of references directly to the author. And here we are, unfortunately, faced with the fact that often prepared by students work does not meet the stated standards of their writing.

Or as an example – browsing as the ability of a person to perceive information in the course of a cursory review. Of course, the mastery of this form of independent learning activities will create the opportunity to reduce the time spent on the work, but will ultimately contribute to the expansion of the analysis and systematisation of information is questionable.

But it is in the information space that provides access to educational resources that new directions are developing, stimulating the development of cognitive activity of young people. The transfer of social activity to the Internet network communities leads to new social practices of young people.

The use of Internet technologies in the educational sphere makes it possible to prepare students for the implementation of professional activities in the new infocommunication space. The effectiveness of students' interaction with the new modern educational environment is determined by the readiness for active subject activity. In this case, we are talking about the sufficient preparedness of the student to the process of independent learning with a high level of reflection, self-government, self-regulation and continuous pursuit of self-education. Of course, a special role is given to self-organisation of students.

Today, an integral quality of the future professional in any dynamically developing sphere should be the ability to effectively organise their work, rational spending of their time. In modern society, a student cannot be successful without a conscious attitude to their own learning and the presence of his formed life strategy.

Self-organisation of activities is an important condition for learning from experience in a virtual educational environment. The effectiveness of students in e-learning depends on how they are guided by their own internal principles, the ability to create conditions for the optimisation of educational tasks and actions.

Let us present some results of theoretical and empirical research of students' self-organisation.

William Ross Ashby, an English psychiatrist, a specialist in cybernetics, belongs to the introduction of the concepts of "self-organisation", "self-organising system" (1947). Self-organisation was considered by the author a process of ordering one-level elements of the system due to internal factors, without external influence. It is characterised by such systemic qualities as adaptability, flexibility, reliability, stability, the desire for balance.

The concept of self-organisation quickly penetrated into various scientific fields, including psychology. However, the psychological interpretation of this phenomenon is ambiguous.

In Russian psychological studies the problem of self-organisation activities , including self-organisation of activity of students, represented in the works by Sergey Alexandrovich Bogomaz (2011), Mikhail Ivanovich Dyachenko, Lev Alexandrovich Kandybovich (1981), Svetlana Sergeevna Kotova (2012), Irina Yurievna Lucheva (2014), Elena Yurievna Mandrikova (2010). Self-organisation is considered from the position of activity, personal and integral approaches.

In the structure of self-organisation there are three components: target, reflexive and personal. The target component of self-organisation of activity is characterised by the adoption and retention of goals, awareness of actions, the ability to self-promotion of goals, independent and conscious organisation of its activities, sustainability.

The reflexive component of self-organisation is associated with the ability of the student to look into the future, to outline the future of their activities. This component is aimed at assessing the attitude to their own activities, making adjustments to it.

The personal component is expressed in the independence of action (the search for an effective solution to the problem, the ability to overcome the dif-

ficulties encountered, the ability to act accordingly to the situation); criticality of action; initiative.

Research question

The problem of self-organisation is relevant both in the process of personal and professional self-realisation, and in the context of effective distribution of time resources. In our study, the self-organisation of the individual is considered as the ability to structure personal time, tactically plan their own activities, purposefully act in solving problems.

The choice of psychological strategy of behaviour in network educational communication is largely determined by the cognitive-style characteristics of users, revealed in the developed educational style. Since e-learning interaction involves self-organisation of their own activities, it is important to consider the relationship of this personal characteristics with the strategies of network activity and learning styles.

Purpose of the study

The authors conducted a pilot study to identify the features of students' network communication strategies and cognitive-style characteristics in connection with the self-organisation of activities.

This aspect is important from the position of practical importance in the situation of rapid development of network educational communication. In the course of network interaction of participants of the virtual educational environment there is a statement and the solution of educational tasks, performance of certain educational actions, mutual control and an assessment of results of educational activity.

Research methods

The pilot empirical study involved 150 students of different areas of professional training (social and humanitarian, technical, physical and mathematical areas) of universities in Moscow and the Moscow region. The average age of the respondents is 21. The average experience of using the Internet is 9.8 years.

The authors used the following methods: survey, testing, methods of mathematical data processing and computer analysis. To explore the psychological strategies of network activity we used "the Questionnaire of behaviour in the Internet" (Zhichkina 2001; Belinskaya 2013: 160). The questionnaire allows to identify three strategies of behaviour on the Internet "activity in the perception of alternatives", "Activity in action", "Internet addiction".

Features of self-organisation were revealed by means of the questionnaire of self-organisation of activity (Mandrikova 2010: 87), intended for diagnostics of formation of skills of tactical planning and strategic goal-setting, features of structuring of activity of self-organisation. The method reflects the degree of self-organisation and self-regulation of activities through the structuring of personal time, plans, goal-setting.

The specificity of educational styles was studied using the method "Diagnostics of educational styles" (Fleming and mills, VARK). The questionnaire allows diagnosing the preferred ways of information perception (visual, auditory, verbal and kinaesthetic).

As an additional tool we used the method "Study of the psychological effectiveness of user interaction with the computer" (modification N. L. Sungurova). The technique allows to distinguish three levels of students' interaction in information technologies (unproductive, insufficiently productive, productive). Assessed the psycho-emotional background, job satisfaction with the technology.

Methods of mathematical data processing: descriptive statistics, nonparametric statistics, correlation analysis. Software: Microsoft Excel, IBM SPSS Statistics Version 20.

RESULTS

The study of psychological efficiency of interaction with information technologies showed that 2% of students have dissatisfaction and unproductive mode of work, low emotional background of interaction with information technologies. 52% of students are in a good acceptable condition, sufficient for e-learning. 46% of respondents demonstrate a productive mode of work, good performance, positive emotional background of e-learning. At the same time, boys are more effective than girls, as well as students of technical and natural sciences in comparison with students of social and humanitarian profile.

The ratio of scales in terms of self-organisation of activities was as follows: "Purposefulness" (average rank 5.9), "Perseverance" (average rank 4.3), "Fixation" (average rank 4), "Regularity" (average rank 3.5), "Orientation to the present" (average rank 1.7) and "Self-organization" (average rank 1.6). Friedman's criterion used for mathematical processing revealed statistically significant differences between scales ($\chi r2 = 568,924$; $p = 0, 00$). Thus, students are characterised by the ability to concentrate on the goal, perseverance, tendency to commit to a pre-planned structure of the organisation of events in time, the tendency to make a strong-willed effort to complete the work started and involvement in daily planning on certain principles.

On the scale of "Consistency", "Dedication", "Perseverance", "Commit", "Focus on present" characterised by the predominance of the parameters in the students of Humanities, but on a scale of "self-organisation" – the students of science and engineering. The Mann-Whitney test showed statistically significant differences: on the scales of "Purposefulness" (U= 3545.5, p=0.00), "Persistence" (U= 3280, p=0.00) and "Self-organisation" (U= 4352, p=0.02).

Students studying in the Humanities, are more focused on the target settings, the use of strong-willed efforts to implement the tasks, while students of natural science and technical profiles have well-developed ability to use external means of self-organisation.

According to the degree and nature of involvement in Internet interaction, there are three types of network activity of students (A. E. Zhichkina, N. L. Sungurova). The scale of "Activity in the perception of alternatives" (average rank 2.59) dominates in this student audience. In second place is the scale of "Tendency to Internet addiction" (average rank 1.73) and then the scale of "Activity in action" (average rank 1.69). As our long-term research experience shows, this trend in the distribution of scales is stable for the student audience. Friedman's criterion revealed significant differences in the level of average values of ranks on scales ($\chi r2=91.204$; $p=0.000$).

"Activity in the perception of alternatives" describes the respondents as directed to the search of his identity. They are aimed at acquiring new experience in virtual communication. This strategy is manifested in the interest in messages, websites, portals of different information content, in the estimated ratio of photo or video materials. The strategy of the "Activity in action" shows people with mild social-role-playing component. In the network, they are willing to get acquainted, initiate discussion topics; vary their personal status. Respondents "Prone to Internet addiction" in network communication are looking for

emotional support, help in experiencing loneliness, strive for self-expression and self-presentation (Ivashchenko, Karabushchenko, & Sungurova 2016: 60).

The ratio of scales according to the method "Diagnostics of educational styles" (Fleming and mills, VARK) was distributed as follows: visual style (average rank 3.9) prevails over verbal (average rank 2.54), audial (average rank 2.45) and kinaesthetic (average rank 1.1), educational styles. Statistical differences were revealed using Friedman's criterion ($\chi r2= 357.67$; $p=0.0$). The severity of the visual type of perception of information indicates a preference for obtaining information through visual AIDS (presentations, maps, diagrams, drawings). In combination with verbal and auditory styles, it indicates students' preference for traditional meeting formats (lectures, seminars, group discussions) and enthusiasm for listening to information. Young people combine different activities with simultaneous listening to music and manipulation of technical devices.

Correlation analysis of the results of the study using the Spearman correlation coefficient revealed a number of statistically significant relationships presented in tables 1, 2.

Table 1. Correlation coefficients of indicators of self-organisation of activity with strategies of network activity, psychological efficiency of interaction with electronic technologies

	Activity in action	Activity in perception	Internet-dependence	Psychological efficiency
Regularity	0.191*	0.018	−0.097	0.148
Purpose	0.035	0.006	−0.163*	0.339**
Persistence	−0.143	−0.118	−0.276**	0.331**
Fixation	0.215**	0.091	0.038	−0.069
Self-organisation	0.193*	−0.092	0.143	−0.042
Focus on the present	−0.030	−0.077	−0.180	0.151

(Self-organisation indicators)

* Communication is significant at 5% level

** Relationship is significant at the 1% level

The "Activity in action" strategy is positively associated with "Regularity" (rs = 0.191; p =0.05), "Fixation" (rs = 0.215; p =0.01), "Self-organization" (rs = 0.193; p =0.05). The strategy of "Tendency towards Internet addiction" is negatively associated with "Sense of purpose" (rs = − 0,163; p =0.05) and "Persistence" (rs = − 0.276; p =0.01).

"Psychological efficiency of interaction with electronic educational technologies" also positively correlates with "Purposefulness" (rs = 0.339 p =0.01) and "Persistence" (rs = 0.331 p =0.01). The more students show these qualities, the more effective the educational information interaction.

Correlation analysis of the results of the samples of boys and girls showed the following. For young men who prefer the strategy of "Activity in action" is characterised by a clear statement of goals, organisation, sociability, social contact, cheerfulness and emotionality. The "Addiction to Internet addiction" strategy is not typical of young students with determination and perseverance in achieving their goals. Girls who choose the strategy "Activity in action" differ, first of all, the ability to manage their own time and good orientation in new situations. Girls who have a habit of following through their decisions and the ability to control their emotions, thoughts and behaviour show a low level of addiction to the Internet. Psychological efficiency of interaction with electronic technologies is associated with perseverance and self-control.

Table 2. Correlation coefficients of indicators of self-organisation of activities with learning styles

	Visual style	Auditory style	Verbal style	Kinaesthetic style
Regularity	0.049	0.060	–0.098	–0.038
Purpose	0.179*	–0.278**	0.214**	0.023
Persistence	–0.039	–0.039	0.169(**)	–0.118(*)
Fixation	0.617(**)	–0.188*	–0.397	–0.068
Self-organisation	–0.461(**)	–0.916**	–0.477**	–0.083
Focus on the present	–0.277(**)	–0.283(**)	0.767**	–0.154

Self-organisation indicators

* Communication is significant at 5% level

** Relationship is significant at the 1% level

"Visual style" is positively associated with "Fixation" (rs = 0.617; p = 0.01) and negatively correlates with "Self–organization" (rs = -0.461; p = 0.01), "Orientation to the present" (rs = -0.277; p =0.01). "Auditory style" is negatively related to "Purposefulness" (rs = -0.278; p =0.01), "Fixation" (rs = -0.188; p = 0.05), "Self–organisation" (rs = -0.916; p =0.01), "Orientation to the present" (rs = – 0.283; p =0.01). "Verbal style" shows a direct correlation with "Purposefulness" (rs = 0.214; p =0.01), "Persistence" (rs = 0.169; p =0.01),

"Current orientation" (rs = 0.767; p =0.01) and "Self–organisation" feedback (rs = -0.477; p =0.01). "Kinaesthetic style" is negatively associated with "Persistence" (rs = -0.118; p =0.05).

With the predominance of students' visual learning style is more developed such characteristics of self-organisation as the ability to concentrate on the goal, the tendency to fix the order of events in time, attachment to a clear schedule, but not enough external means of organising activities, not developed focus on the present. With a pronounced auditory style, all the above indicators of self-organisation are very weak. Verbal learning style is positively associated with commitment and perseverance and negatively with self-organisation and orientation to the present. Students with a predominantly kinaesthetic style is not sufficiently developed perseverance.

In addition, the relationship between network behaviour strategies and learning styles was identified.

For example, the scale "Activity in the perception of alternatives" negatively correlates with the "Auditory learning style". The prevailing strategy of "Activity in the perception of alternatives" can talk about the enthusiasm for finding information, cognitive interest in different aspects of life, combined with an emotional assessment of what is happening in the virtual space. Students who prefer this strategy are least likely to use an auditory learning style.

Students with a pronounced strategy of "Activity in action" prefer the information displayed in the form of verbal signs, and the way it is processed – in the form of reading and writing. Such students are characterised by insufficient expression of social behaviour. They prefer active actions in networks, but almost do not feel the need to create something fundamentally new and original.

Students with a high level of tendency to Internet addiction prefer "Visual learning style". Such students are attracted by a variety of visibility of information obtained on the Internet, the speed and ease of obtaining a large amount of information, regardless of its quality, Respondents perceive the Internet as an environment in which obtaining the necessary emotional support for them is most likely than in real communication. The visibility of the information presented and the possibilities of various simulations and practices on the Internet satisfy the desire of students to get rid of the requirements and limitations of the social environment in the real world.

Conclusion

Comparative analysis of the results of network activity strategies revealed that the dominant strategy is "Activity in the perception of alternatives", less preferred "Tendency to Internet addiction" and "Activity in action".

 Students who prefer active network strategies of behaviour are involved in tactical daily planning of their activities according to the learned principles, tend to fix the order of events in time, tied to a clear schedule, show rigidity in terms of planning, use external means of organising activities.

Insufficient development of students' ability to concentrate on the goal and the tendency to intensify strong-willed efforts to complete the task and streamline the activity make them more prone to dependence on the Internet.

Commitment and perseverance in achieving the goals increase psychological efficiency in interaction with information technology.

Preference for network communication strategies is associated with cognitive-style features of students, which, in turn, correlate with the characteristics of self-organisation.

The results prove that the propensity of the individual to self-organisation is an important component of personal potential, allows it to resist undesirable changes and provide psychological security in the information space.

The organisation of the space of virtual educational interaction should take into account the characteristics of self-organisation of students' activities. When creating projects related to the solution of specific educational tasks (information retrieval, preparation of electronic texts, electronic speeches, etc.), it is important to focus on various leading representative systems, dominant style trends in network communication.

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