

## The Formation and Development of Cognitive Activity of Students in the Learning Process

Zhannat Saparkyzy<sup>a</sup>, Gulzhan Isatayeva<sup>b</sup>, Zahida Kozhabekova<sup>b</sup>,  
Aimzhan Zhakesheva<sup>b</sup>, Gulzhamal Koptayeva<sup>e</sup>, Gulzhan Agabekova<sup>f</sup>  
and Sholpan Agabekova<sup>g</sup>

<sup>a</sup>Korkyt ata Kyzylorda State University, Kyzylorda, KAZAKHSTAN; <sup>b</sup>South Kazakhstan State Pedagogical Institute, Shymkent, KAZAKHSTAN; <sup>c</sup>Miras University, Shymkent, KAZAKHSTAN

### ABSTRACT

In this article we will discuss how the holding of a special and dedicated work helped to change the levels of formation of the major components of cognitive activity. Cognitive activity with the content aspect is a system of perceptual, mnemonic and intellectual activity and from the form - as an individual, joint, or pseudo-individual pseudo joint activity. We selected a set of methods and techniques of experimental research which has allowed to trace the dynamics of transformation of the "external" aspects of the learning process in the "inner" side of the learning process. Thus, the hypothesis of the necessary conditions that foster students' cognitive activity, which are the processes of transformation of co-dialogic students' cognitive activity in individual and dialogic students' cognitive activity was confirmed.

### KEYWORDS

Cognitive activity, formation, cognitive functions, co-dialogic students, cognitive activity, Individual and dialogic students, cognitive activity

### ARTICLE HISTORY

Received 19 September 2016  
Revised 22 October 2016  
Accepted 30 November 2016

## Introduction

In the history and theory of pedagogy theory existed diverse selection of educational content. Theory of didactic materialism claimed that the main purpose of education is to transfer the student as much as possible the amount of knowledge from various fields of science. Theory of didactic utilitarianism claimed that the main criterion that should guide the definition of the content and learning, is the reconstruction of the social experience, a variety of practical exercises should play the role of factors, activating the thinking and activities of the students.

For the methodology for determining the content of higher education, until recently, it was typical signs of the first theory. We put forward a variety of requirements for the content and organization of development of normative and

**CORRESPONDENCE** Zh. Saparkyzy ✉ Zh\_saparkyzy@mail.ru

© 2016 Saparkyzy et al. Open Access terms of the Creative Commons Attribution 4.0 International License (<http://creativecommons.org/licenses/by/4.0/>) apply. The license permits unrestricted use, distribution, and reproduction in any medium, on the condition that users give exact credit to the original author(s) and the source, provide a link to the Creative Commons license, and indicate if they made any changes.

methodical documentation of high school; in the formation of educational material implemented extensive approach, based on the increasing differentiation of disciplines and expand the scope of study program.

Scientists didacticians higher school have all become increasingly turn to the theories of the content of general education, in particular, to the content of education theory, developed under the leadership of I.Ja. Lerner (1981) and M.N. Skatkin (1986), according to which the basis for justification of detention education should be the position of the unity of the substantial and remedial parties of training. According to this theory the basis of the content of education should be the position of the unity of the parties, and the content can not be reduced only to the list of knowledge and skills on subjects should include the various elements of social experience. Having more and new theories. The theory of humanistic education - one of the leading theories of pedagogy US since the late 60-ies. The main objectives of this theory:

— education of a free individual, which has a solid self-control and capable of self-realization;

— human education, which can love, to feel deeply, to create and to continue the process of self-education;

— creating the necessary conditions for the development of all the potentialities inherent in man - the desire for learning and self-development, inherent in any normal individual.

Clearly, student engagement is a rich research area. Educators must continue to seek to understand and apply specific, well-considered, if not agreed upon, strategies that support student engagement in learning both in and beyond the classroom. The consequences of not engaging students in learning are reportedly dire (Prensky, 2001; Tapscott, 1998; Gilbert, 2007; Willms, 2003; Claxton, 2007; Zheltukhina et al., 2016; Chizh et al., 2016). “Some educationists consider engaging disengaged pupils to be one of the biggest challenges facing educators, as between 25% (Willms, 2003) and over 66% (Cothran & Ennis, 2000) of students are considered to be disengaged” (as cited in Harris, 2008).

It is obvious that students live in world that engages them differently than the world their parents experienced. That students respond to this world and have changed over the last twenty years in response to their engagement within a technology rich society and changes in upbringing almost goes without saying. How schools respond is key to student success. A great issue might be that students leave school incapable of or unprepared for a productive and healthy life in the “Knowledge Society” in which they will live and lead (Gilbert, 2007). If we fail to change our pedagogy, curriculum, and assessment strategies, we fail our students and jeopardize our own futures (Willms, 2003; Willms & Flanagan, 2007; Willms, Friesen & Milton, 2009; Tapscott, 1998; Prensky, 2005; Gilbert, 2007; Robinson, 2009).

Students have changed over the last twenty years; perhaps as a result of a technology rich upbringing, they appear to have “different” needs, goals, and learning preferences than students in the past. We must better understand these youth to determine how to best engage them in learning; yet, there is a notable lack of “student voice” or student perspectives in the literature on student engagement. That said, some critics (Carlson, 2005; Carnivale & Young, 2006; Bennett, Maton & Kervin, 2008) do not believe today’s students require

special educational concessions. In fact, they believe we are dumbing down an entire generation through coddling.

As “Professor Baron” is quoted in S. Carlson (2005):

It is very common to hear people say, ‘Here’s the Millennial or the digital generation, and we have to figure out how they learn. Poppycock. We get to mold how they learn.’ Administrators push professors to use technology in the classroom because they believe that is what today’s students want, says Ms. Baron. And faculty members feel pressured to shorten lectures, increase group-discussion time, and ignore the “multitasking” student who is e-mailing his friends in the back of the room -- all to attract and satisfy a generation that doesn’t have the discipline of its predecessors. ‘We think that the students will come if we teach in a way that meets the expectations we have of what the students want. At some point, what we are doing is killing higher education’ (Carlson, 2005).

However, this view is a minority; the majority of the literature we read embraces the idea of changing education. In fact, most educators practically implore transforming education and pedagogy from Kindergarten through post-secondary and strongly believe we fail to meet the needs of students who have grown up in a digital world and are heading into different cultural and economic futures rich in ever-advancing technology and information (Project Tomorrow, 2010). Today’s world absolutely requires collaborative critical thinkers, creative and courageous innovators, and true lifelong learners (Prensky, 2005; Tapscott, 1998; Robinson, 2009).

When we sift the literature for common strategies to improve student engagement in learning, a rather clear pattern of practices has emerged and certain “best practices” were recommended and repeated. For example, Windham recommends that, to engage learners in learning, new educational curriculum and activity must include – “Interaction, Exploration, Relevancy, Multimedia and Instruction” (pp 5.7-5.9). Her themes echo throughout the literature. Various elements of Windham’s list are shared by S.D. Willms (2003), G. Claxton (2007), L.E. Hay (2000), K. Barnes, R. Marateo, & S.P. Ferris (2007), J. Dunleavy & P. Milton (2009), and OECD (2008) to name a few. We have synthesized the following categories from our reading and will use these to elaborate further: (1) Interaction, (2) Exploration, (3) Relevancy, (4) Multimedia, (5) Instruction, and (6) Authentic assessment.

### **Methodology**

The theory of functional analysis, developed a position on an integral connection with the activities of knowledge. The main criterion that should guide the selection and construction of the content of education must be an ideological approach.

One of the current theories justify the content of education technology is primarily "pedagogical theory of freedom", which tries to make sense of the discussion about the formal and material education, one of the important subjects of the discussion was the concept of "unified labor school".

These theories and adjoins the theory of personality-oriented education. It is proposed to abandon the accepted teaching and disciplined model of building

education and go to the construction of personality-oriented model of educational content.

One of the important problems of education - the problem of teaching methods - remains relevant both in theoretical and in practical terms. Depending on its decision is itself the learning process, the activities of teachers and students, therefore, the result of learning in higher education in general.

Let us examine one of the classifications - methods of classification by nature (degree of autonomy and creativity) of students in the activities. This classification I.Ja. Lerner (1981) proposed and M.N. Skatkin (1986). They noted that many of the previous approaches and teaching methods based on differences in their structures or external sources. Since the learning success to a great extent depends on the direction and the intrinsic activity of the trainees, the nature of their activities, it is the nature of the activity, the degree of self-reliance and creativity and should be an important criterion for the choice of methods. I.Ja. Lerner (1981) and M.N. Skatkin (1986) offered distinguish five methods of learning, and in each subsequent level of activity and independence in activities of students is growing.

1. The explanatory and illustrative method. Students are taught in lectures of educational methodical literature or through the on-screen manual in a "ready" state. Perceiving and comprehending the facts, evaluations, conclusions, students remain within the framework of reproductive thinking. In high school, this method is most widely used to transfer large amounts of information.

2. Reproductive method. This includes the use of a study on the basis of a sample or regulations. Activities of trainees is algorithmic in nature, ie, carried out according to the instructions prescribed by the rules in similar, similar to the sample shown situations.

3. The method of presentation of the problem. Using a variety of sources and resources, teacher before to present the material, raises the problem, forms a cognitive task, and then, revealing evidence of the system by comparing the point of view of the different approaches, shows a way to solve cognitive problems. Students how to become witnesses and accomplices of scientific research.

4. Part of the search or heuristic method. It consists in the organization of an active search for solutions put forward in the training of cognitive tasks or under the supervision of a teacher, or on the basis of heuristic programs and guidelines. The process of thinking becomes a productive character, but gradually guided and controlled by the teacher or by the students themselves based on the work of the programs and textbooks. This method, which is one of the varieties of heuristic conversation, - a proven way of thinking activation, field of interest to the knowledge at seminars and colloquia.

5. Research method. After reviewing the material, posing problems, objectives and a brief verbal or written instruction, students independently study the literature sources are observations and measurements, as well as perform other actions exploratory nature. Initiative, independence, creative search are shown more fully in the research activities. Methods of study directly grow into methods of scientific research.

The university operating various forms of teaching: lectures, practical classes in their variety - seminars, laboratory work, practical work, individual

work with the student teacher internship. The didactics of these forms are treated as ways to control cognitive activities to address specific teaching tasks. At the same time, lectures, seminars, practical classes, independent work emerge as the organizational form of training, as are the methods of the interaction of students and teachers, within which implemented the content and teaching methods. The learning process is completed and is accompanied by a variety of methods and forms of control.

The doctrine is not only inherently good memorization of scientific statements, which are transferred to the student teacher "from the head to the head" - is a process and the result of active cognitive, above all, mental activity of the student to find and mental processing of scientific knowledge. The doctrine refers to one of the main activities. This is a special and complicated process, modern didactics attaches great importance to the development and creativity of the student.

During the training you need to look for opportunities for their independent work. It should encourage independent examples, try to ensure that students are not mechanically memorized the teacher lectures, and tried to find their own answers to the questions put forward by the teacher.

On the concept of "intensification of teaching" adjoins the term "activation of learning." Under the activation of educational activity is understood as purposeful activity of the teacher, aimed at the development and use of such forms, content, methods and teaching aids that promote interest, independence and creative activity of students in the assimilation of knowledge and the formation of ability to predict the production situation and make their own decisions.

## Results and Discussion

For successful mastering humanitarian professions at the university is entitled to a pronounced type of verbal intelligence. Humanitarians should be characterized by the breadth of cognitive interests, erudition, proficient in the language, have a large vocabulary, be able to use it properly, accurately correlate concrete and abstract concepts and be generally highly abstract thinking. Specialists of the humanities is constantly live, figuratively speaking, "in the world of words", while the technical and natural sciences experts concerning increasingly turning to the substantive and concrete world of things. J.R. Young (2006) people applying for admission to the natural faculties, should have, first of all, a highly logical and abstract thinking, the ability to freely manage their own thought processes, ie, quickly and actively focus on behalf of the process, completely apart from the rest. This is possible only when there is a high degree of concentration. The rigor and logic of judgments necessary for mastering the natural professions should be well formed by the time of admission to different specialties. Natural independence of judgment. Introvert, personality of a highly significant correlation with the level of student performance in mathematics. So necessary condition for successful learning in high school, it should also be included in the structure of the special abilities of students of natural faculties.

The leading component in the structure of mental abilities of future engineers - a high level of spatial representations and quick wits. In addition,

they must have a high level of non-verbal, i.e. really-practical intelligence. The experimental data proved that the spatial representations achieve a high level of development already at the freshmen. This level is the maximum an individual at the time of admission to high school and in the learning process develops very slightly. So, when entering the applicant institution must have a highly developed ability to spatial concepts. Obviously, it is more dependent on the quality of the natural properties of the individual, as opposed to other mental faculties, such as comprehension.

Research shows that first-year students do not always successfully acquire knowledge not because they have not formed such personality traits as a willingness to learning, the ability to learn independently, to monitor and evaluate themselves, owning their own individual characteristics of cognitive activity, the ability to properly allocate their time for self-training. Adaptation of students to the educational process comes to an end in the late 2nd - early 3rd semester.

Development of students in various courses has some characteristics: first course solves the problem of initiation of the recent entrants to the students' forms of collective life. The second course - the most intense period of learning activities of students. In life sophomores intensively includes all forms of learning and perception. Students receive general training, formed their broad cultural needs and requirements. The third course - the beginning of specialization, the strengthening of interest in scientific work as a reflection of the further development and deepening of the professional interests of students. The urgent need for specialization leads to a narrowing of the scope of diverse interests of the individual. Henceforth forms of identity formation at the university in its main features are defined by the specialization factor. The fourth course - the first real acquaintance with a specialty in the period of practical training for students' behavior is characterized by an intensive search for more efficient ways and forms of special training, there is a reassessment of many students values of life and culture. Fifth course - the prospect of a speedy graduation generates clear, practical installation on a future career.

Psychological development of student's personality - the dialectical process of creation and destruction of contradictions, go external to the internal, self-motion, active work on yourself. The development of the person as increasing the scale and level of integration of the formation of substructures and their increasing complexity synthesis. On the other hand, there is a parallel process of increasing differentiation of mental functions (development, complication, "branching" of mental processes, states, properties).

In this regard, there are three main types of activity and behavior of students in the field of teaching and learning. The first type of person has a broad approach to the goals and objectives of training in high school. Interests students focus on areas of knowledge wider than stipulated by the program, social activity of students is manifested in a variety of forms of university life. This type of activity is focused on broad specialization on diversified training.

Having considered and analyzed the theoretical approaches and directions in the study of cognitive activity, it can be concluded that the problem is urgent at the present stage and is reflected in the works of Russian and foreign scientists. It should also be emphasized that all aspects of modern conceptual analysis of teaching as a specific activity of the subject are important not only in

terms of the theoretical solution of the problem relationship of learning and development, but also for the practice of high school training. The conceptual distinction between different layers of cognitive activity of students is a necessary condition for the scientific organization of all teacher training process and the transformation of mastering a single subject in the development of metacognitive abilities of students, not only in the process of mastering knowledge.

The effectiveness of training depends on the level of cognitive activity of the individual in the learning process. Despite the development of the problem, the development of vocational and cognitive activity of students is not yet a need for a large part of the teachers and the students themselves universities, which affects the results of training. Thus, there is a contradiction between the need for the development of vocational and cognitive activity of students - the future of creative and energetic professionals and lack of actual use of the process.

In a fairly limited number of works related to vocational and cognitive activity of students, we met only two definitions of the term "vocational and cognitive activity." E.N. Yaroslavova (1991) considers the professional cognitive activity as an integral quality of personality, which is reflected in the ability to purposeful, conscious acquisition of significant professional skills and abilities, in the quest for a more complete mastery of the methods of future professional activity, continuous self-improvement, in the direction of achieving excellence.

I.G. Kopotjuk (1989) defines the professional and cognitive activity as a form of social activity, which manifests itself in a positive attitude towards the process of learning and future work in the realizable capacity for this activity at a high level of independence and desire to constantly replenish and strengthen the professional knowledge, skills and skills.

We believe that professional-cognitive activity is not only a certain feature, a property of the individual, but also the result of the appearance of this property in practice, ie, in the activity of the person. On this basis, we define vocational and cognitive activity as the quality of the human personality, which manifests itself in his willingness and effective mastery of knowledge activities and methods of work in a specific professional field for the optimal time, with the mobilization of all its moral and strong-willed effort to achieve this goal. Levels of professional cognitive activity we define respectively by describing the criteria and indicators, and assessing the quality of the individual, and its activities. We consider the levels of formation of is professional-informative activity of students on the basis of emotional and volitional, personal and qualitative, cognitive (cognitive), professionally-activity (professional practice) criteria.

## Conclusions

Indicators of professional cognitive activity on the emotional and volitional criteria are, in our view, joy, enthusiasm, determination, perseverance, self-awareness, mobilization of physical and mental strength in the process of acquiring knowledge and methods of professional activity in the course of their use in practice.

Indicators of student-quality criteria are energy, curiosity, strength, integrity, independence, determination, commitment, attention span,

intellectual initiative, the need for knowledge, concentration, perseverance in overcoming difficulties. Indicators of cognitive criterion as follows: cognitive interest, progress on major professional disciplines, the quality of knowledge, the speed of the different nature of the tasks, the selection of an optimal solution of tasks running, the use of additional material, the activity in the classroom. Indicators professional criterion may be the ability to solve practical professional tasks, participation in scientific research, the ability to replace a professional in the workplace, participation in professional competitions and other events, search for more information. The levels of professional and informative activity nature of the entity's activities and its ability and willingness to learn are numerous ways to master their future profession. The developed criteria and indicators of professional and cognitive activity can determine the levels of its formation of low, medium and high.

The low level includes a numerically small moments of manifestation of a positive attitude to learning and work; possible situational and short-term interest in their chosen profession; positive motivation is not formed, and the activity is manifested only on demand; knowledge - unsystematic and skills - fragmentary; Student independently cope with the tasks only wearing a reproductive character.

The average level is reflected in the display of sustained interest for their future profession and the process of acquiring knowledge; pursuit of search activity that, in particular, manifested in the formulation of questions; the student has knowledge of the leading system at the level of operating concepts; basic skills are formed. Emotional and volitional inherent qualities such as diligence, diligence, and responsibility.

The high level is determined by the fact that student activity is characterized by stable inner need to become a professional and to develop his own style of activity; preference is given to the process of obtaining self-knowledge, which are developing character, different depth and scientific character, manifested the desire to apply this knowledge in practice in order to achieve high performance in the framework of mastering a profession. The student has the skills of culture of brainwork, his independent professional and educational activities are characterized by enthusiasm, initiative, vigor, determination, creativity.

This system is the level of formation of is professional-informative activity of integrated reflects its inner and outer sides and allows you to diagnose and manage student activity focused in the process of training.

### Disclosure statement

No potential conflict of interest was reported by the authors.

### Notes on contributors

**Zhannat Saparkyzy** – PhD candidate Korkyt ata Kyzylorda State University, Kyzylorda, Kazakhstan.

**Gulzhan Isatayeva** – Associate Professor South Kazakhstan State Pedagogical Institute, Shymkent, Kazakhstan.

**Zahida Kozhabekova** – Associate Professor South Kazakhstan State Pedagogical Institute, Shymkent, Kazakhstan.



**Aimzhan Zhakesheva** - Associate Professor South Kazakhstan State Pedagogical Institute, Shymkent, Kazakhstan.

**Gulzhamal Koptayeva** - Lecturer Miras University, Shymkent, Kazakhstan.

**Gulzhan Agabekova** - Lecturer Miras University, Shymkent, Kazakhstan.

**Sholpan Agabekova** - Lecturer Miras University, Shymkent, Kazakhstan.

## References

- Barnes, K., Marateo, R. & Ferris, S.P. (2007). *Teaching and Learning with the Net Generation. Innovate Journal of Online Education*, 3(4). Direct access: [http://www.innovateonline.info/pdf/vol3\\_issue4/Teaching\\_and\\_Learning\\_with\\_the\\_Net\\_Generation.pdf](http://www.innovateonline.info/pdf/vol3_issue4/Teaching_and_Learning_with_the_Net_Generation.pdf)
- Bennett, S., Maton, K. & Kervin, L. (2008). The 'digital natives' debate: A critical review of the evidence. *British Journal of Educational Technology*, 39(5), 775–786.
- Carlson, S. (2005). *The Net Generation goes to college. The Chronicle of Higher Education, Section: Information Technology*, 52(7). Direct access [http://www.msmla.edu/include/learning\\_resources/todays\\_learner/The\\_Net\\_Generation.pdf](http://www.msmla.edu/include/learning_resources/todays_learner/The_Net_Generation.pdf)
- Carnivale, D. & Young, J.R. (2006). *The challenges and benefits of requiring students to buy laptops. The Chronicle of Higher Education*. Direct access <http://chronicle.com/article/The-ChallengesBenefits/2829/>
- Chizh, N.V., Slyshkin, G.G., Zheltukhina, M.R., Privalova, I.V. & Kravchenko, O.A. (2016). Concept “Medical Museum” as a Sociocultural Phenomenon. *International Journal of Environmental and Science Education*, 11(17), 10529-10538.
- Claxton, G. (2007). Expanding young people’s capacity to learn. *British Journal of Educational Studies*, 55(2), 1-20.
- Cothran, D.J., & Ennis, C.D. (2000). Building bridges to student engagement: Communicating respect and care for students in urban high schools. *Journal of Research and Development in Education*, 33(4), 106-117.
- Dunleavy, J. & Milton, P. (2009). *What did you do in school today? Exploring the concept of Student Engagement and its implications for Teaching and Learning in Canada*. Toronto: Canadian Education Association (CEA), 1-22.
- Gilbert, J. (2007). *Catching the Knowledge Wave: Redefining knowledge for the post-industrial age. Education Canada*, 47(3), 4-8.
- Harris, L.R. (2008). A Phenomenographic Investigation of Teacher Conceptions of Student Engagement in Learning. *The Australian Educational Researcher*, 5(1), 57-79.
- Hay, L.E. (2000). Educating the Net Generation. *The Social Administrator*, 57(54), 6-10.
- Kopotjuk, I.G. (1989) *Razvitie tvorcheskoj pedagogicheskoy dejatel'nosti studentov*. Omsk: Vostok.
- Lerner, I.Ja. (1981). *Didakticheskie osnovy metodov obuchenija*. Moscow: Pedagogika.
- Organization for Economic Co-operation and Development (OECD) (2008). New Millennium Learners. Initial findings on the effects of digital technologies on school-age learners. *OECD/CERI International Conference “Learning in the 21st Century: Research, Innovation and Policy,”* May 15-16 2008. Paris: Center for Educational Research and Innovation.
- Prensky, M. (2001). Digital natives, digital immigrants. *On the Horizon*, 9(5), 1–6.
- Prensky, M. (2005). Engage me or enrage me. *EDUCASE Review*, 40(5), 61–64.
- Project Tomorrow (2010). *Unleashing the Future: Educators “Speak Up” about the use of Emerging Technologies for Learning. Speak Up 2009 National Findings*. Teachers, Aspiring Teachers & Administrators, May 2010. Direct access: [www.tomorrow.org/speakup/](http://www.tomorrow.org/speakup/)
- Robinson, K. (2009). *The Element: how finding your passion changes everything*. Toronto: Penguin Group
- Skatkin, M.N. (1986). *Metodologija i metodika pedagogicheskikh issledovanij*. Moscow: Izd-vo «Feniks».
- Tapscott, D. (1998). *Growing up digital: the rise of the Net generation*. New York: McGraw Hill.
- Willms, J.D. & Flanagan, P. (2007). *Canadian Students: Tell them from me. Education Canada. The Education Association*, 47(3), 46-50.



- Willms, J.D. (2003). *Student Engagement at School: A Sense of Belonging and Participation. Results from PISA 2000*. Paris: Organization for Economic Co-operation and Development (OECD).  
Direct access: <http://www.unb.ca/crisp/pdf/0306.pdf>
- Willms, J.D., Friesen, S. & Milton, P. (2009). *What did you do in school today? Transforming classrooms through social, academic and intellectual engagement*. Toronto: Canadian Education Association.
- Yaroslavova, E.N. (1991) *Jekzistencial'naja i gumanisticheskaja psihologija*. Moscow: Nauka
- Young, J.R. (2006). *The fight for classroom attention: Professor vs. laptop. The Chronicles of Higher Education*. Direct access: <http://chronicle.com/article/The-Fight-for-Classroom/19431>
- Zheltukhina, M.R., Zinkovskaya, A.V., Katermina, V.V. & Shershneva, N.B. (2016). Dialogue as a Constituent Resource for Dramatic Discourse: Language, Person And Culture. *International Journal of Environmental and Science Education*, 11(15), 7408-7420.