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University Students' Giftedness Diagnosis and Development

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ABSTRACT

This article deals with the problem of students' giftedness development. Students' test results (n=851) for "IQ level" and "creativity level" indicators demonstrated the need to improve the quality of work in reference to students' professional giftedness development at the university. Designed complex of pedagogical conditions involves students' giftedness development on organizational-pedagogical, psycho-pedagogical and didactic levels. Results can be used in educational practice of higher educational institutions of any type as methodological recommendations in work organization with gifted students, as well as in specialists training.

KEYWORDS
Giftedness diagnosis, students' technical training, IQ level, psycho-pedagogical training conditions, the Republic of Kazakhstan

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Introduction

One of the main principles of modern education is learner-centered learning, aimed at students' personal potential maximum development (Hannafin, 2012; Kalimullin & Masalimova, 2016). Moreover, transition to a new model of student body formation characterized by a high level of intellectual and creative abilities is caused by the need for competitive, creative professionals, capable of critical thinking and problems' non-standard solutions (Ren, Guo & Pan, 2013) with an ability to adapt to socio-economic changing conditions (Fugelova, 2013).

Currently, the problem of specialists' personnel potential formation is one of the most urgent precondition for reforming national systems of higher education (Darling-Hammond, 2015; Ivanenko et all., 2015). The situation is exacerbated by the fact that differential training as a manifestation of learner-centered approach is not practiced in universities at the proper level. This condition can be considered as one of the causes of gifted students' academic underperformance (Reis & McCoach, 2000).

Literature review

Giftedness on much earlier age stages (preschool and middle school age) has traditionally been considered as a universal ability (Peyre et al., 2016). However, giftedness acquires substantive professional orientation during the period of student life (Karadağ, Karabey & Pfeiffer, 2016).

It is worth noting that pedagogical task at the university moves from general abilities diagnosis and development to seek adequate ways to implement student's abilities in certain professions (Dal Forno, Bahia & Veiga, 2015). In this regard, a lot of attention is paid to social (Lyusin & Ushakov, 2004), emotional (Mayer, Caruso & Salovey, 1999) and practical intelligence (Sternberg et al., 2002) as factors of success in professional field.

In addition, ability to effectively use cognitive and metacognitive knowledge in professional activities is also related to obligatory aspects of modern specialist, as well as the ability to develop behavioral scenarios that meet the new social reality (Baas et al., 2015).

Thus, we define future specialist's professional giftedness as integrative-personal formation characterized by a high level of general and professional abilities in unity with motivation and personal characteristics that allow achieving success in teaching and professional activities.

The Republic of Kazakhstan (RK) is implementing the State Program on Identification, Development and Support of Gifted Children and Students. Its main objectives are:

– strategy definition for identification, education and training of gifted children and students;
– maintenance and development of a single and continuous formation of intellectual potential of the Republic of Kazakhstan;
– promoting gifted students' socio-cultural formation (The concept of identification, development and support of gifted children in the Republic of Kazakhstan, 1999).

However, such systematic work is carried out mainly at the level of school education institutions and does not apply to universities. Thus, insufficient attention to the existing students' capabilities is regarded as one of the outstanding issues for higher education market in Croatia, Slovenia and Hungary (Stimac & Simic, 2012).

In addition, traditional school displays students' personality traits, including giftedness, beyond the pedagogical process as it relates them to psychologists' competence (Eysenck & Eysenck, 1987). However, we hold to the opposite opinion and consider development of new requirements for identification and development of gifted students in university practical activities as one of initial pedagogical problems.

Aim of the study

The purpose of this research is to determine the initial level of students' capabilities and to propose the complex of pedagogical conditions in order to improve the process of their professional skills formation.

Research questions

The research questions were as follows:

What is the average level of university students' creativity and intellectual development?

How these indicators are differentiated depending on students' chosen specialties?

What are the psychological and pedagogical conditions influencing the formation of students' professional skills?

Method

Diagnosis of the initial level of students' giftedness development was conducted during 2015-2016 academic years on the base of Abai Kazakh National Pedagogical University (Almaty). Students of 1-2 courses of 7 faculties and 14 specialties came into experiment (Table 1).

Table 1. Test sample (*N* = 851)

Faculty	Specialty	Course 1	Course 2
Psycho-pedagogical faculty	Pedagogy and Psychology	60	
Psycho-pedagogical faculty	Methodology of initial training		60
Faculty of Philology	German	75	
Faculty of Philology	English		65
Faculty of International Relations	International law	95	
Faculty of International Relations	International information		70
Faculty of History	World history	44	
Faculty of History	Oriental studies		40
Faculty of Natural Sciences and Geography	Country studies and tourism	55	
Faculty of Natural Sciences and Geography	Chemistry and Biology		65
Institute of Mathematics, Physics and Informatics	Computing and Information technology	85	
Institute of Mathematics, Physics and Informatics	Methodology of teaching mathematics, physics and informatics		50
Institute of Art, Culture and Sports	Music education and choreography	47	
Institute of Art, Culture and Sports	Theory and methodology of initial military preparation		50

In order to determine the general level of intellectual development we used tests of G. Eysenck (4 and 5 variants) (2005) designed for the age from 18 to 50 and represent verbal, numerical and graphic material in conjunction with a variety of ways for intellectual tasks' wording and presentation. We took the average rate of two tests as a result.

Selection criterion of this type of test was the mixed nature of tasks that allow to give a general assessment of intelligence quotient (IQ) and to determine the average rate of aggregate primary groups of general intellectual ability (verbal, numerical and spatial).

Further, students' results were differentiated into 5 types that characterize different levels of intellectual development (Table 2).

Table 2. Students' differentiation by the level of IQ

Levels of development	*IQ*
Very Superior (VS)	140 and above
Superior (S)	120-139
Above Average (AA)	110-119
Average (A)	90-109
Below Average (BA)	90 and below

Since the level of intellectual development is not a statement of fact that the person is gifted, we have also conducted a diagnosis of students' creativity in order to make subjects' diagnostic examination objective. For this purpose, we used Tests of Creative Thinking (TTCT) of Torrance P. "Incomplete Pictures" (Tunick, 2013). Summing up the results we obtained quantitative and percentage proportion of students by levels of creativity.

To assess imaginative creativity and to determine the place of each student in terms of creative thinking development, we relied on Torrence's P. table of creativity characteristics (Table 3).

Table 3. Characteristic of quantitative values by Torrance Tests of Creative Thinking

T-points	*Characteristic by Torrance P.*	*Characteristic of the level of creativity (Cr)*
70 and above	High (excellent)	Very Superior (VS)
66-70	Above Average	Superior (S)
61-65	Rather Above Average	Above Average (AA)
40-60	Average	Average (A)
35-39	Rather Below Average	Below Average (BA)
30-34	Below Average	
30 and below		

To obtain a generic indicator "imaginative creativity" we summarized T-standard points on four initial indicators for each drawing: originality, abstractness of title's name, degree of detail, temporary connection resistance (Tok=To+Tn+Tr+Tz).

Thus, we compared diagnostic results of students' levels of IQ and creativity and determined the place of each of them in differentiated line by the level of general giftedness (VS, S, AA, A, BA).

These IQ test data and Cr allowed us to identify a typology of gifted students, depending on the combination of levels of development of these universal factors of giftedness: 1) high-high, 2) high-average, 3) average-high, 4) high-low, 5) low-high, 6) average-average, 7) average-low, 8) low-average, 9) low-low.

Thus, we assigned as very superior the students of 1 type, as superior – 2 and 3 types, above average – 4 and 5 types, as average (within limits) – 6, 7, 8 types, as weak (below average) – 9 type. This classification makes it possible to differentiate students, to place them in groups by the level of intellectually creative potential and to make the further program of development in accordance with their "profiles".

The final phase provided the usage of the modeling methods consisted in constructing the scheme of the improvement of the future specialists' professional development in higher education (Lebedeva, 2004). The final phase provided the usage of the modelling methods consisted in constructing the scheme of the Начало формы

Results

Diagnosis of the initial level of IQ showed that most students have an average level of IQ, the appropriate rate. At the same time, the number of very superior students, which showed the results of 140 points and above, is not revealed. It turned out to be 66 people at the level of superior. At the same time, the test found a considerable number of students at the average level; we attributed them to potentially gifted students – the number of them was 454 from the entire sample, representing 53.35%. The rest of the student body contains students at the average level of development – from 11 to 57% for a course. The number of students who showed results below the average level is 40, in general it is 2-3 students per course. The average IQ level for the entire sample was 110 points. The students, whose specialties are "International information", "International Law", "Computing and Information technology, showed the best results (Table 4).

Table 4. Diagnostic results of students' level of IQ

Specialty	*Course*	*Num. of people*	*Average IQ level*	*VS*	*S*	*AA*	*A*	*BA*
Pedagogy and Psychology	1	60	109,5	-	8 (13.3 %)	21 (35 %)	28 (46.7 %)	3 (5%)
Methodology of initial training	2	50	99	-	-	20 (40%)	26 (52%)	4 (8%)
German	1	75	111,2	-	4 (5.3%)	57 (76%)	9 (12%)	5 (6.7%)
English	2	65	110		4 (6.15%)	43 (66.15%)	13 (20%)	5 (7.7%)
International law	1	95	118	-	15 (15.79%)	46 (48.42%)	28 (29.47%)	6 (6.32%)
International information	2	70	120,4	-	13 (18.57%)	22 (31.43%)	35 (50%)	-
World history	1	44	107	-	-	18 (40.9%)	26 (59.1%)	-
Oriental studies	2	40	108,6	-	-	22 (55%)	16 (40%)	2 (5%)
Country studies and tourism	1	55	112	-	-	30 (54.54%)	24 (43.64%)	1 (1.82%)
Chemistry and Biology	2	65	107	-	2 (3.1%)	37 (56.92%)	23 (35.38%)	3 (4.6%)
Computing and Information technology	1	85	119.4	-	14 (16.48%)	50 (58.82%)	19 (22.35%)	2 (2.35%)
Methodology of teaching mathematics, physics and informatics	2	50	111.3	-	-	38 (76%)	10 (20%)	2 (4%)
Music education and choreography	1	47	97	-	1 (2.13%)	11 (23.4%)	29 (61.7%)	6 (12.77%)
Theory and methodology of initial military preparation	2	50	110.1	-	5 (10%)	39 (78%)	5 (10%)	1 (2%)
General rates		851	110	-	66 (7.76%)	454 (53.35%)	291 (34.2%)	40 (4.69%)

Rapid-test results of students' creativity showed that most students have a level of creativity above average. The best rates showed the students, whose specialties are "Music education and choreography", "International Law", "Oriental studies" and "Methods of initial training" – from 68 to 70 points in general. Rates below average were recorded only in 10 students, representing 1.18% of the total number of subjects (Table 5).

Table 5. Diagnostic results of students' level of creativity

Specialty	*Course*	*Num. of people*	*Average ind. Cr*	*VS*	*S*	*AA*	*A*	*BA*
Pedagogy and Psychology	1	60	66.1	15 ppl. (25%)	17 (28.3%)	16 (26.7%)	12 (20%)	-
Methodology of initial training	2	50	68	16 (32%)	13 (26%)	9 (18%)	12 (24%)	-
German	1	75	63.6	10 (13.3%)	23 (30.7%)	20 (26.7%)	20 (26.7%)	2 (2.6%)
English	2	65	64	11 (16.9%)	25 (38.47%)	19 (29.24%)	9 (13.85%)	1 (1.54%)
International law	1	95	68.5	23 (24.3%)	35 (36.84%)	27 (28.43%)	10 (10.52%)	-
International information	2	70	67	10 (14.29%)	20 (28.57%)	27 (38.57%)	13 (18.57%)	-
World history	1	44	61.2	4 (9.1%)	20 (45.45%)	3 (6.82%)	15 (34%)	2 (4.54%)
Oriental studies	2	40	68	11 (27.5%)	19 (47.5%)	6 (15%)	4 (10%)	-
Country studies and tourism	1	55	66	9 (16.36%)	27 (49.1%)	13 (23.64%)	6 (10.9%)	-
Chemistry and Biology	2	65	63.9	10 (15.39%)	26 (40%)	16 (24.62%)	12 (18.46%)	1 (1.54%)
Computing and Information technology	1	85	65	12 (14.12%)	40 (47.06%)	20 (23.53%)	13 (15.29%)	-
Methodology of teaching mathematics, physics and informatics	2	50	61	9 (18%)	13 (26%)	12 (24%)	14 (28%)	2 (4%)
Music education & choreography	1	47	70	20 (42.55)	20 (42.55%)	3 (6.4%)	4 (8.5%)	-
Theory and methodology of initial military preparation	2	50	63.3	12 (24%)	8 (16%)	15 (30%)	13 (26%)	2 (4%)
General rates		851	65.4	172 (20.21%)	30 (35.96%)	206 (24.2%)	157 (18.45%)	10 (1.18%)

Summing up test results on determine levels of IQ and Cr we received initial data that characterize the level of students' overall giftedness. Most of participants in the experiment (38.8%) referred to the category "Above Average", 31, 96% of respondents showed quite good results during both tests, so we consider them as potentially gifted students. The rest (28.97%) have average or below average rates. That confirms our thesis about the necessity of purposeful development of students' professional giftedness at the university (Table 6).

Table 6. Initial condition of development levels of students' overall giftedness

Levels of development	*Quantitative and percentage ratio*
Superior (S)	272(31, 96%)
Above Average (AA)	330 (38,8%)
Average (A)	224 (26,3%)
Below Average (BA)	25 (2,94%)

In this regard, we offer a model of students' giftedness development that involves a set of pedagogical conditions at three levels: organizational-pedagogical, psycho-pedagogical and didactic (Figure 1).

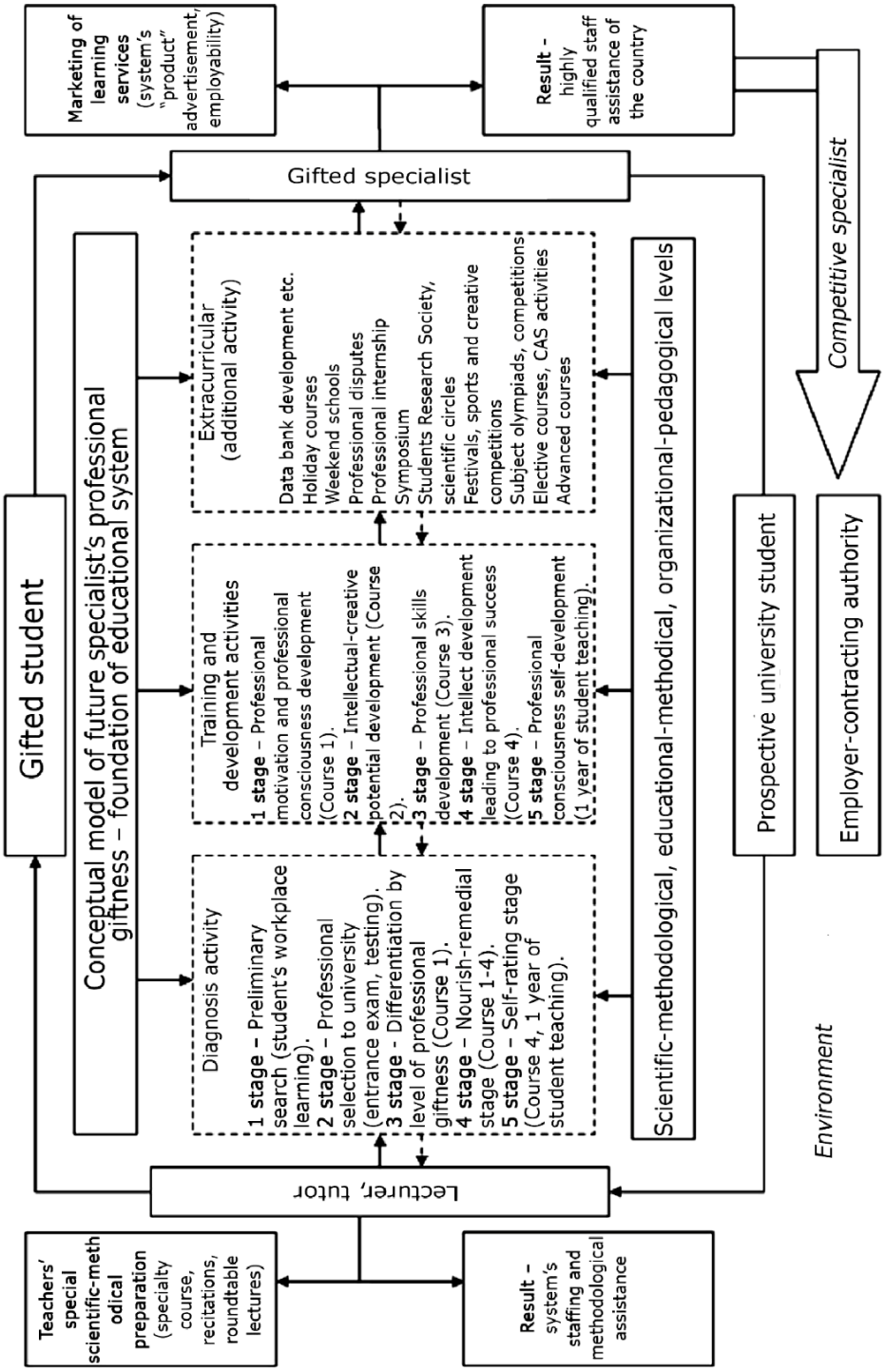

Figure 1. Student's giftedness development system

Organizational-pedagogical conditions:

– creation of psycho-pedagogical service (department) on work with gifted students (diagnostics, forecasting, planning of "individual trajectory of personal development," development of special training and development programs etc.) as the main educational system of control;

– creation of tutor's service – individual consultants and mentors for students, helping students to develop "individual trajectory of education and professional development", developing individual programs of students' giftedness development;

– training methodological support (development of special training programs on subjects, variability of courses for educational services selection, availability of individual development plans and programs etc.);

– diagnostics and monitoring of the level of professional giftedness development in general and its individual components, wherein, the original orientation of future specialist's professional giftedness development is how he learns an obligatory minimum of training programs;

– training and development differentiation (creation of mini-groups by levels of skills and professional giftedness) both during training and during extracurricular activities;

– morally psychological, material stimulation of gifted students (scholarships, participation in scientific conferences, seminars, publications of students' scientific articles, involvedness in the program of fundamental programs researches , as well as in the plans' research of scientific organizations, university faculties, departments);

– organization of group research and teams, creation of the Council of Young Scientists (CYS), student scientific societies (SSS), student scientific circles (SSC), creative laboratories, scientific schools under departments, faculties ensuring differentiation of scientific interests, thematic unity and scientific communication;

– solution of gifted students' employment problem in connection with personal and social problems in real life that will allow a student to realize his own demand in labor market and real possibilities of future professional success.

Psycho-pedagogical conditions:

– stimulating teachers' and undergraduates' motivation to work in educational system of future university specialists' professional giftedness development;

– definition of specific objectives of professional giftedness in general and its individual components diagnosis and development at every stage of work;

– development of students' educational and professional motivation in all classes (lectures, seminars, practical, students' individual work etc.) In order to create students' professional self-awareness and understanding of the importance of developing their abilities and intellectually creative potential as for educational activity within the university and for the future professional activity;

– use of cooperation and co-creation principles, "transmission" of teacher's creative potential on the basis of dialogue interaction, intersubjective communication with the student; striving to improve the teacher's own professional competence as an example of a creative person for gifted students;

– promoting independence of opinions that challenge existing views and provide new ideas, independence in organization and evaluation of students' activity results by their own;

– promoting in-depth study of chosen topics from among elective courses in maximum extent, maintaining and developing independent researching skills, "learn to learn" abilities; student-future specialist is an active subject of his own activities;

– creation of a continuous training research work, thematic agreement of students' research work, continuity of scientific generations, scientific research work integration in educational disciplines, courses, practice;

– creation of an appropriate psychological climate in classrooms (friendly relations with the student, joyful relationship with knowledge, positive emotions); creation of a students' self-esteem, "a sense of success", self-reliance, respect for "right to make mistakes" principle;

– identification of leaders, definition of the on-line, course, group status in the eyes of students, teachers, heads of university faculties.

Didactic conditions:

– research approach to conducting lectures, seminars and practical courses based on the problem presentation of material associated with new prospects in science development; the use of heuristic methods for organization gifted students' creative activity;

– insertion of a wide (global) themes and problems in view of students' scientific interests differentiation, as well as theoretical orientation on the future professional activity;

– use of an interdisciplinary approach in teaching based on interdisciplinary integration issues, themes and problems related to different fields of knowledge;

– fill the learning process with "open type" tasks in studying the problems, allowing to take into account the tendency of gifted students to research type of behavior, self-intellectual activity;

– use of active forms of learning: group discussion, "brainstorming", role-playing and simulation games, group and individual research projects etc.; optimal combination of frontal, group, individual forms of work;

– teaching students to assess their work based on specific criteria for content related to a particular area of research and problems of future professional activity.

Combination of all these factors forms the professional competence as an integral characteristic of graduator's professional giftedness from higher vocational establishment. Professional elite formation in a particular industry should be the result of proposed educational system depending on the profile of training that after graduation will be able to engage in professional activities.

Discussion and Conclusion

In identifying the level of gifted students' development, we proceeded from the popular model of giftedness by J. Renzulli (1986), which deals with intellect and creativity as one of the main parameters of general giftedness. In later publications (Reis & Renzulli, 2004), a scientist said that the definition of giftedness should not stand in the forefront of cognitive factors, because they do not explain the productivity in adulthood.

Methodology of creativity assessment by P. Torrens that we used is adapted on schoolchildren sample and is most often used in diagnosis of children with the age of 5-17 (Runco et al., 2010). In Russia, there are also attempts to adapt this sub-test on managers' sample from 23 to 35 years old (Tunick, 2013). However, we found no cases of test use in diagnosis of students' capabilities. We have adapted the test "Incomplete Pictures" on students from pedagogical university. Special emphasis was placed on the identification of non-verbal creativity as the ability to create a new product in conditions of minimum verbalization.

Results of the experimental part of this study indicate that a high level of students' intelligence cannot guarantee their successful creative research activity, since it is not always comparable to the level of creativity. Studies in Chicago city educational institutions showed analogical arguments (Getzels & Jackson, 1962).

It is worth noting that psycho-diagnostic examinations of students' intelligence are widely used in education systems of advanced Europe countries, aimed at measuring how well an individual has mastered intellectual skills in order to study (Kwiek, 2014). To this end, a variety of programs was developed: test program of academic evaluation, national testing program of abilities and achievements in accordance with the requirements of colleges and universities, advanced selection of programs for students with additional training in certain areas etc. In addition, there were developed a special controlling bodies: testing services in education and the College Board.

This indicates that the level of gifted students' diagnostics is well developed at the national level, but we do not mark the same feature in the practice of the Republic of Kazakhstan and other former Soviet states.

In summary, experimental data of the study confirmed the need to improve the quality of work on students' professional giftedness development at the university: 28.97% of tested students showed average or below average results for "level of IQ" and "level of creativity" rates.

Proposed principles of systematic pedagogical work with students at the university are concentrated on four major interrelated aspects: scientifically methodical, diagnostic, developing and labor.

Implications and Recommendations

Developed system of students' giftedness development is a complex of organizational, psychological, pedagogical and didactic conditions. Thus, the submissions can be useful in educational practice of higher education

institutions of any type, in work organization with gifted students and in teaching of pedagogical disciplines, specialists training and retraining.

Disclosure statement

No potential conflict of interest was reported by the authors.

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References

Baas, D., Castelijns, J., Vermeulen, M., Martens, R., & Segers, M. (2015). The relation between Assessment for Learning and elementary students' cognitive and metacognitive strategy use. *British Journal of Educational Psychology*, 85(1), 33–46.

Dal Forno, L., Bahia, S., & Veiga, F. (2015). Gifted amongst Preschool Children: An Analysis on How Teachers Recognize Giftedness. *International Journal of Technology and Inclusive Education*, 5, 707–715.

Darling-Hammond, L. (2015). *The flat world and education: How America's commitment to equity will determine our future*. Teachers College Press.

Eysenck, H. J. (2005). *IQ tests*. *Astrel Publishing house*.

Eysenck, H. J., & Eysenck, M. W. (1987). *Personality and individual differences*. Plenum.

Fugelova, T. A. (2013). Professional mobility of students of a technical college as a social and pedagogical problem. *Journal of Man and Education,* 3(36), 83–86.

Getzels, J. W., & Jackson, P. W. (1962). *Creativity and intelligence: Explorations with gifted students.* New York: Wiley

Hannafin, M. J. (2012). Student-centered learning. In *Encyclopedia of the Sciences of Learning* (pp. 3211–3214). Springer US.

Ivanenko, N. A., Khairova, I. V., Fajzrakhmanova, A. L., Khalilova, T. V., Kharisova, G. M., Lisitzina, T. B., & Shaimukhametova, S. F. (2015). Competitiveness of professional education: Purposes, tasks and factors of its participation in the international educational services market. *Asian Social Science*, 11(1), 369.

Kalimullin, A. M., & Masalimova, A. R. (2016). Editorial: Actual issues of national education: Theory and practice. *IEJME-Mathematics Education*.

Karadağ, F., Karabey, B., & Pfeiffer, S. (2016). Identifying Gifted Preschoolers in Turkey: The Reliability and Validity of the Turkish-Translated Version of the GRS-Preschool/Kindergarten Form. *Journal of Education and Training Studies*, 4(10), 8–16.

Kwiek, M. (2014). Structural changes in the Polish higher education system (1990–2010): a synthetic view. *European Journal of Higher Education*, 4(3), 266–280.

Lebedeva, Ya. P. (2004). Mathematical models as an educational means. *Pedagogy,* 2, 11–19.

Lyusin, D. V., Ushakov, D. V. (Ed.) (2004). Social Intelligence: Theory, measurement, research. *Institute of Psychology of the Russian Academy of Sciences,* 176.

Mayer, J. D., Caruso, D. R., Salovey, P. (1999). Emotional Intelligence meets traditional standards for an intelligence. *Intelligence,* 27, 267–298.

Peyre, H., Ramus, F., Melchior, M., Forhan, A., Heude, B., Gauvrit, N., & EDEN Mother-Child Cohort Study Group. (2016). Emotional, behavioral and social difficulties among high-IQ children during the preschool period: Results of the EDEN mother–child cohort. *Personality and Individual Differences*, 94, 366–371.

Reis, S. M., & Renzulli, J. S. (2004). Current research on the social and emotional development of gifted and talented students: Good news and future possibilities. *Psychology in the Schools*, 41(1), 119–130.

Reis, S., & McCoach, D. (2000). The underachievement of gifted students: What do we know and where do we go? *Gifted Child Quarterly*, 44(3), 152–170.

Ren, N., Guo, J., & Pan, F. (2013). College students' part-time working experience and the competitiveness in the labor market using Beijing Normal University as an example. *Money China*, 15, 266–268.

Renzulli, J. S. (1986). The three-ring conception of giftedness: A developmental model for creative productivity. In R. J. Sternberg & J. E. Davison (Eds.). *Conceptions of giftedness* (pp. 53–92). New York: Cambridge University Press.

Runco, M. A., Millar, G., Acar, S., & Cramond, B. (2010). Torrance tests of creative thinking as predictors of personal and public achievement: A fifty-year follow-up. *Creativity Research Journal*, 22(4), 361–368.

Sternberg, P., Forsyth, J., Hadland, J., Horvard, J. A., Wagner, R. K., Williams, V. M., Snook, S. A., Grigorenko, E. L. (2002). *Practical intelligence.* St. Petersburg: "Peter" Publishing House.

Stimac, H., & Simic, M. L. (2012). Competitiveness in higher education: A need for marketing orientation and service quality. *Economics & Sociology*, 5(2), 23.

The concept of identification, development and support of gifted children in the Republic of Kazakhstan (1999). *Methodology collection, 3,* 3–24. Almaty: Republican Scientific and Practical Center "Daryn".

Tunick, E. E. (2013). *The best tests on creativity. Diagnosis of creative thinking.* St. Petersburg: "Peter" Publishing House.