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CHESS RESEARCH LABORATORY

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In 2014 "Chess Research Laboratory" was founded through the initiatives of President-Founder of Chess Academy of Armenia Smbat Lputyan with the objective to identify the effectiveness of teaching chess in elementary schools of the Republic of Armenia. The Laboratory is installed at Khachatur Abovian Armenian State Pedagogical University.

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For the first time in Armenia the field of psychological researches has been provided with ‘’Egoskop’’ scientific research complex that allows to organize objective psychological analyses and testing.

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Taking into consideration the educational goals of elementary-school standards for Chess as a curriculum item, the Chess Research Laboratory set forth relevant research objectives and pertinent methodology.

Educational aims of school standards	Research subject matter	Methodology

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Elementary-school standard for Chess as a Curricular Subject (for 2-4 schooling grades) s t a t e m e n t

Aim: to develop learner's attention;

Objective: to analyze the indicators of attention concentration and stability;

Methodology: stability evaluation of attention and barriers.

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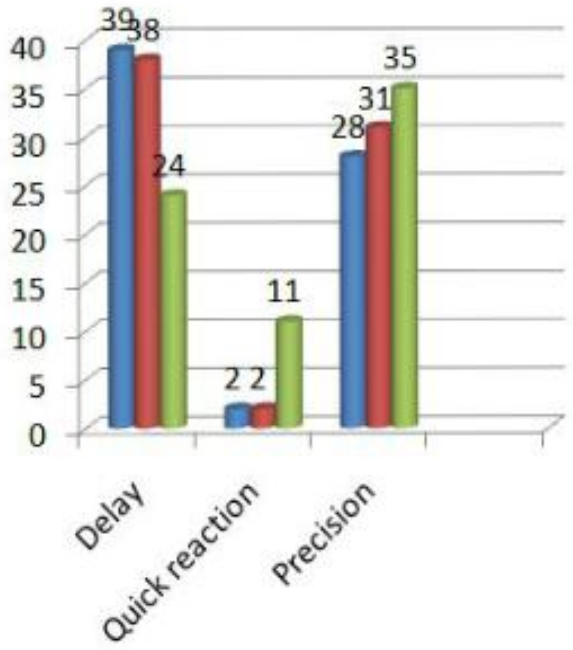
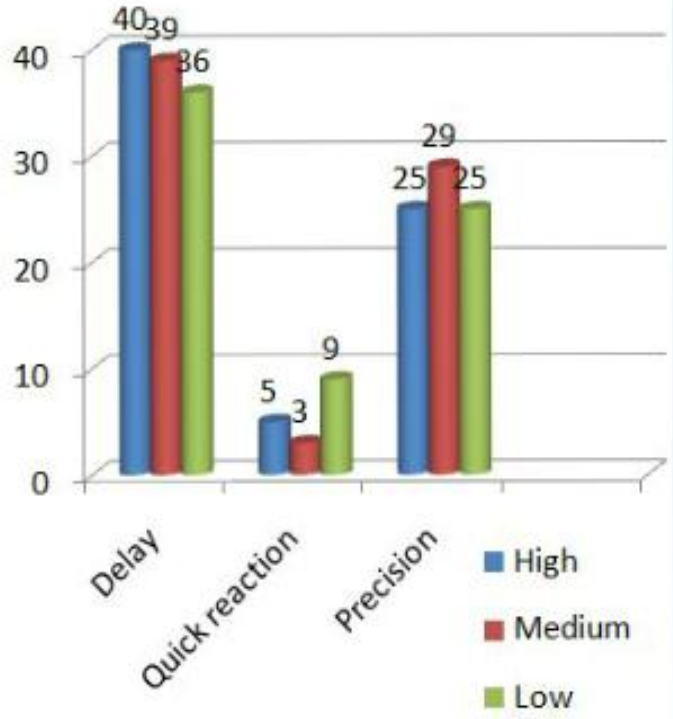
At 4th schooling grade

Attention evaluation



Stability evaluation of barriers



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ANALYSIS OF the Outputs of ATTENTION AND BARRIER STABILITY EVALUATION METHODOLOGY

According to attention evaluation standard:

4th-grade learners with low, medium and high academic progress have shown a larger number of quick reactions. It is believed that by quick reaction the learners try to get more correct reactions, and it leads to attention concentration increase.

According to barrier stability evaluation standard:

4th-grade learners with low, medium and high academic progress have shown obviously more number of correct reactions, which results in attention stability increase.

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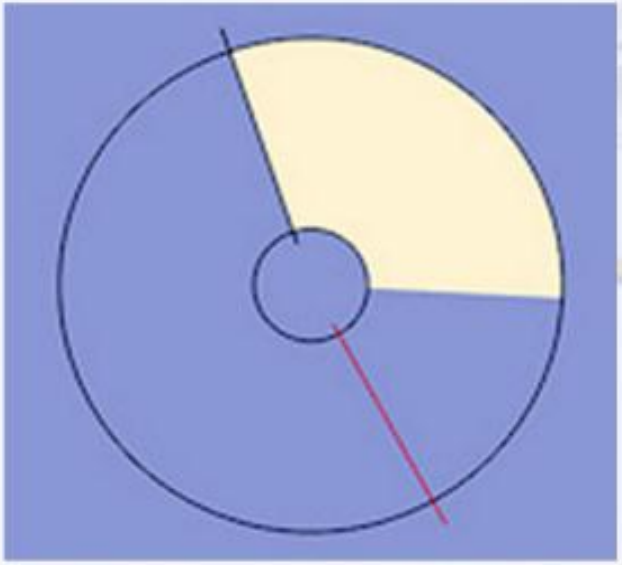
Aim: to develop learner's determination and patience;

Objective: to evaluate the ability of proportioned understanding and arrangement of time and place changes;

Methodology: Reaction to moving objects.



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AVERAGE OUTPUTS OF METHODOLOGICAL ANALYSIS OF REACTION TO MOVING OBJECTS									
2nd SCHOOLING GRADE			3rd SCHOOLING GRADE			4th SCHOOLING GRADE		
ACADEMIC PROGRESS AMONG EXPERIENCED LEARNERS								
Moving object reaction standard	High	Medium	Low	High	Medium	Low	High	Medium	Low
MOM Index= 2/3	1	1	1	0	0	1	0	0	0

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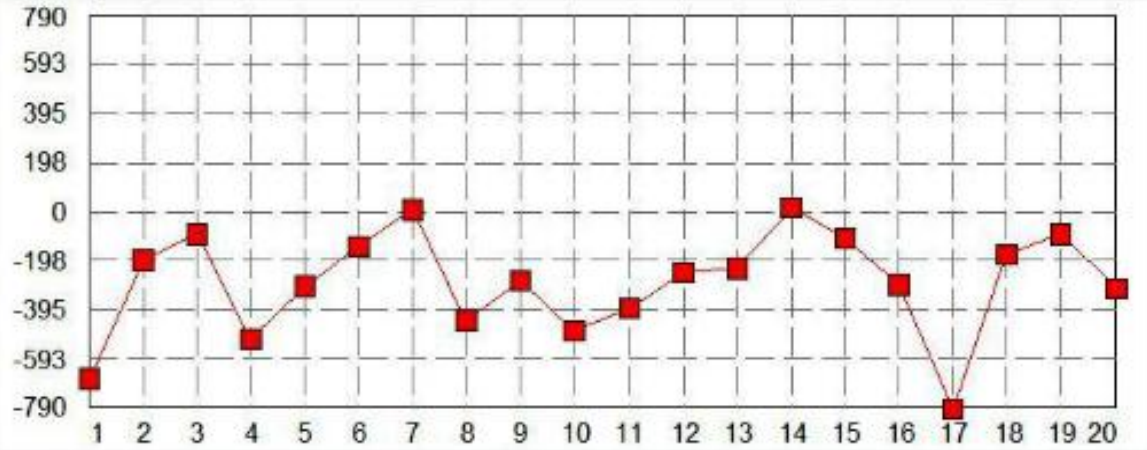

METHODOLOGICAL ANALYSIS OF REACTION TO MOVING OBJECTS

Gradually decreasing coefficient of reaction to moving objects has been observed among 2nd-4th-grade learners with high, medium and low academic progress.

Consequently, learners manage to grasp properly the changes in time and place dimensions through precise reaction to signals.

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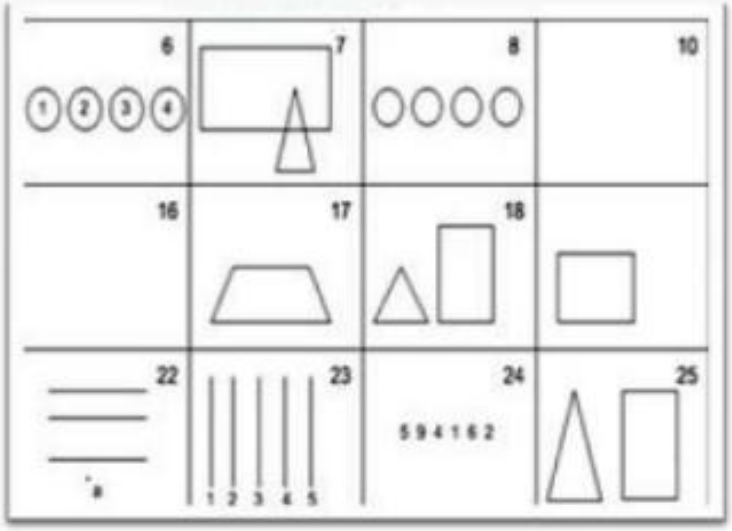
Aim: form and develop learner's skills for self-management and autonomous activity;

Objective: assimilating new activities fields and quality evaluation of the activity developed;

Methodology: Intellectual lability.



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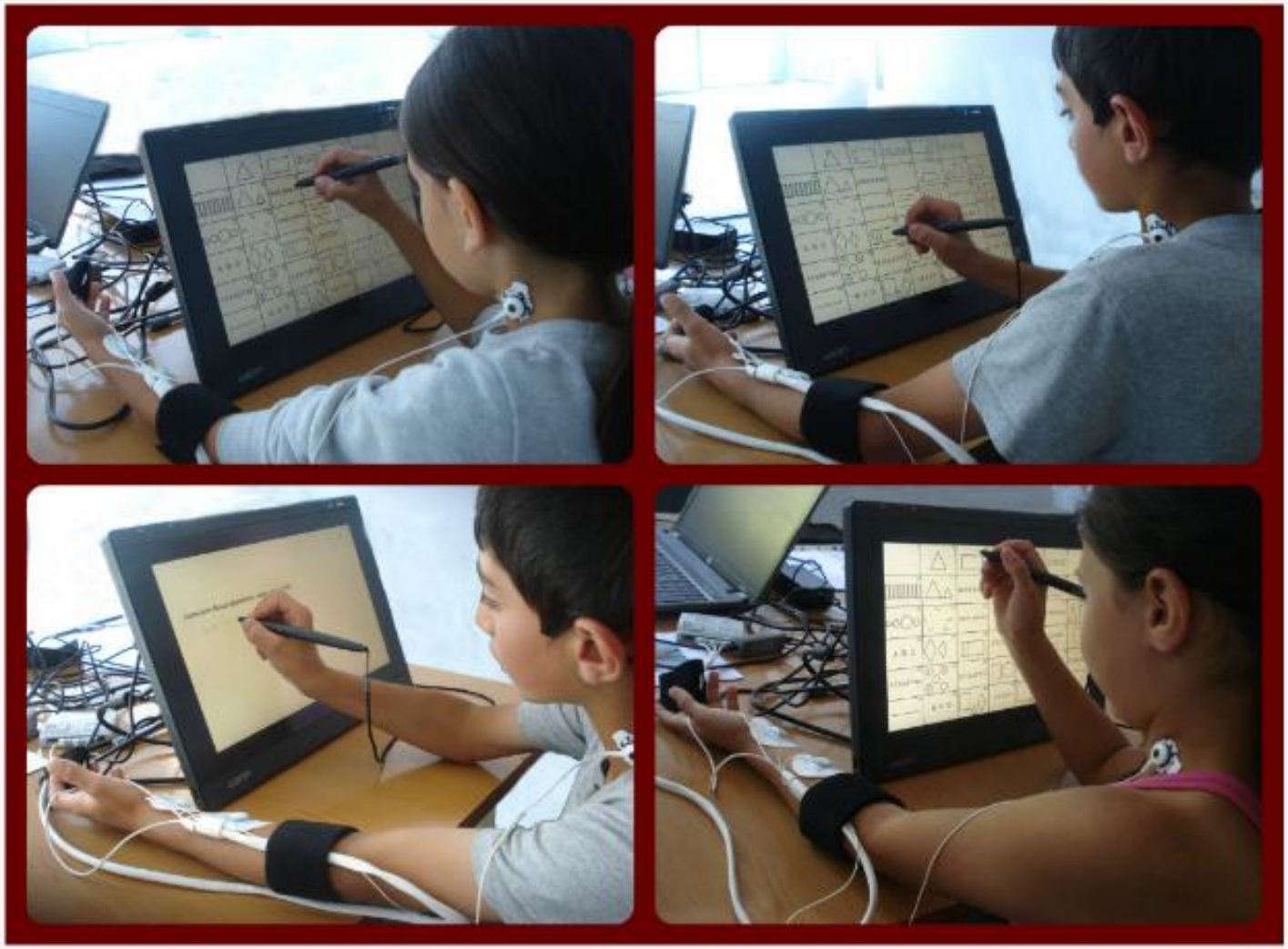

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The physiological data analysis allows to conclude:

According to the 4th and 5th-grade learners' answers, the reliability index ($p<0.05$) prevails by 2/3 in 40 questions in total;

The cross-correlation between the modal components, describing the relative value of each modality, with Z that stands for the modality "act", prevails in the answers given to the test items.

14	C	12. Квадрат 18	XYZ	-16	9	p<0.05	Z...
15	C	21. Квадрат 27	XYZ	-16	9	p<0.05	Y
16	C	28. Квадрат 34	XYZ	-15	6	p<0.05	Z*...
17	C	13. Квадрат 19	XYZ	31	13	p<0.01	Z...
18	C	3. Квадрат 5	XYZ	22	7	p<0.005	Z*...
19	C	7. Квадрат 10	XYZ	-30	11	p<0.005	Y*
20	C	9. Квадрат 13	XYZ	11	4	p<0.005	Y*...
21	C	16. Квадрат 22	XYZ	-16	6	p<0.005	Z*...
22	C	23. Квадрат 29	XYZ	26	9	p<0.005	Y*...
23	C	1. Квадрат 1	XYZ	81	8	p<0.001	Y*...
24	C	2. Квадрат 4	XYZ	97	12	p<0.001	ZY*
25	C	4. Квадрат 6	XYZ	61	8	p<0.001	Y*...
26	C	5. Квадрат 7	XYZ	30	9	p<0.001	Z...

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Therefore, the reliability of the modality "act" evidences the high level of assimilation of the new type of activity, i.e.

Chess, consequently, it evinces the Learners' skills and competences for self-organization (self-management) and autonomous activity development.

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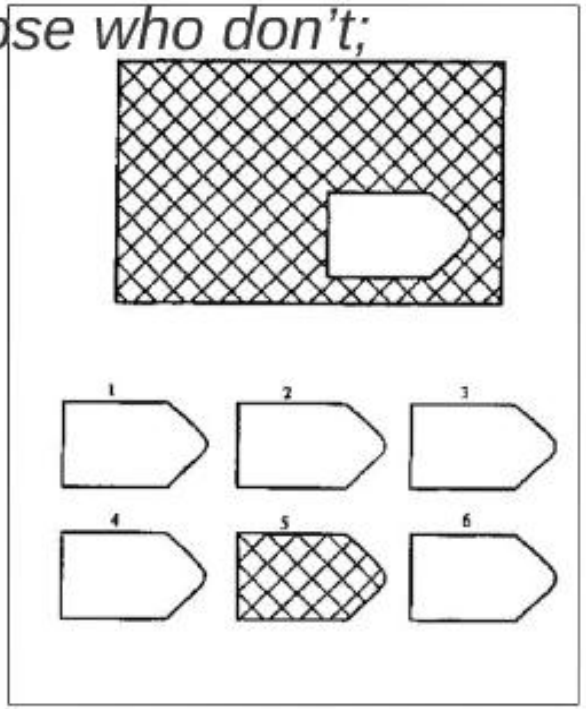
Aim: *to form and develop Learner's mental abilities;*

Objective: *to detect and compare the level of logical thinking among the groups of students learning chess and those who don't;*

Methodology: *Raven progressive matrices.*



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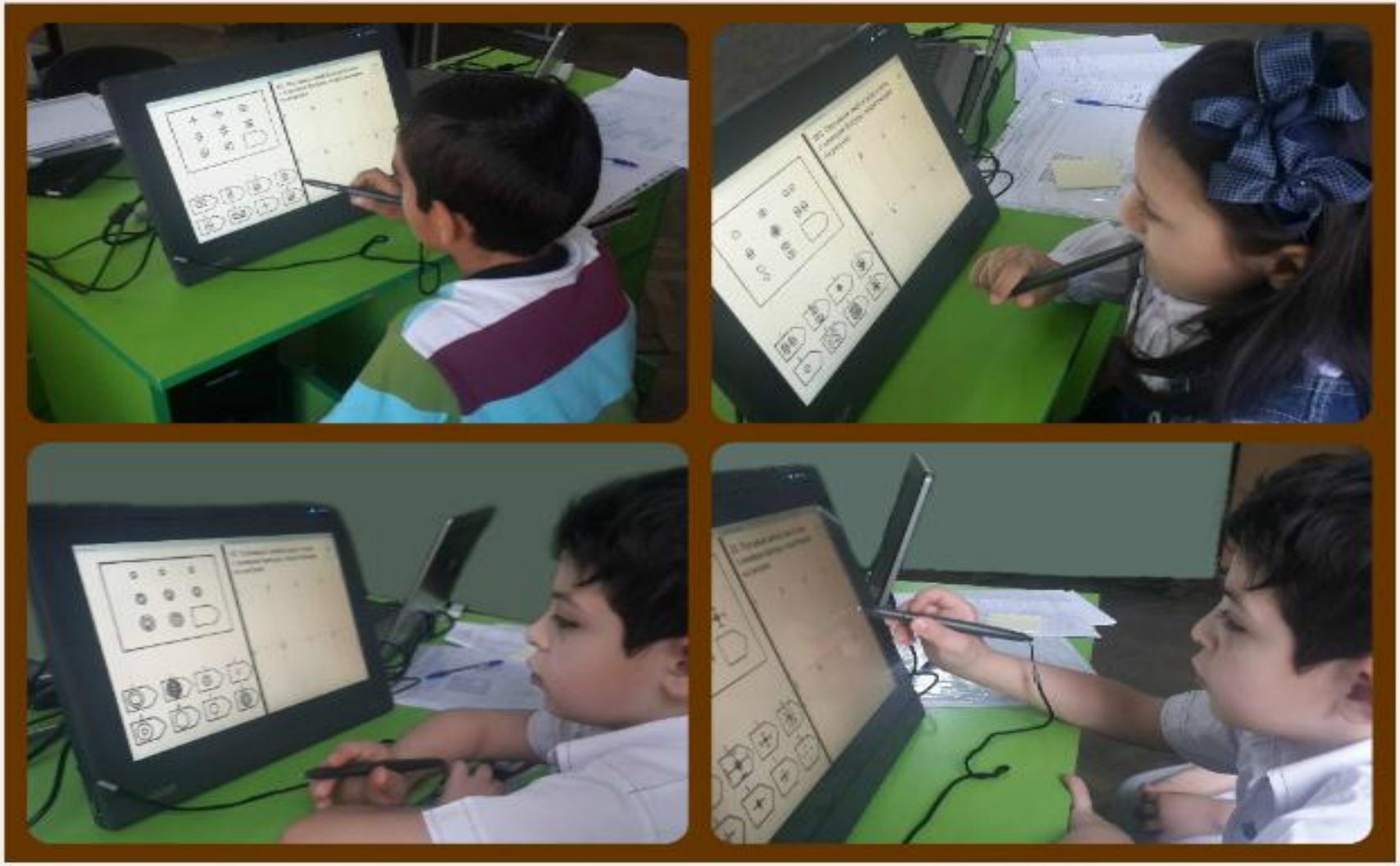

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"RAVEN" PROGRESSIVE MATRICES METHODOLOGICAL ANALYSIS (%)					
Description of basic principles of tasks		4th grade, learning chess, School N1, Stepanakert, Nagorno-Karabakh Republic		4th grade, not learning chess, School N7, Stepanakert, Nagorno-Karabakh Republic	
		ACADEMIC PROGRESS OF EXPERIENCED LEARNERS			
		High	Medium	High	Medium
SERIES A	*Interrelation Principle*	35	50	29	43
SERIES B	*Similarity Principle*	55	45	41	28
SERIES C	*Progressive Change Principle*	45	41	38	20

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METHODOLOGICAL ANALYSIS OF RAVEN PROGRESSIVE MATRICES

According to the Correlation principle in matrices, 4th-grade students with low, medium and high-level academic progress, learning chess, have recorded a higher degree of efficiency in:
differentiating the main elements of structure and to identify relations between them
identifying the missed element and tracing comparison with the given examples.

According to the Similarity Principle, 4th-grade chess learning students with low, medium and high academic progress managed to use the ability of identifying symmetry and linear differentiation in decision making.

According to the Progressive Change Principle, 4th-grade chess learning students with low, medium and high academic progress managed to use the abilities of dynamic (quick) observation, following changes, dynamic attention and imagination, consequently, their logical thinking has developed.

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