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Relationship between New Science Books with Creativity of Junior High School (Seventh Grade) Learners in the Academic Year 2013– 2014

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ABSTRACT

The purpose of this study was to investigate the effect of training of new science book with creativity learners of seventh grade of Isfahan in 2013-2014. The sample size is formed "300 teachers" based on random cluster sampling and answered to researcher made questionnaire consisting of 48 questions. This questionnaire is developed based on Torrance's theory about creativity training and Williams's creativity training patterns and content of new sciences book of the seventh grade. Reliability of this questionnaire was evaluated with Cronbach Alfa method that was (0.96). Validity of tools was assessed by formal validity. Then, the data was analyzed by chi-square and Friedman tests. The results showed that all components mentioned in research about training of new sciences book of seventh grade had significant effect on improvement of student creativity.so the highest rank to increasing of learners' participation component creativity in group and team works with ratings mean 31.78 and lowest rank of new sciences book training leads to risk-taking in learners with ratings mean 21.17.

KEYWORDS: New Science Book, Creativity, Torrance's Theory about Creativity, Williams's Creativity Training Patterns

1. INTRODUCTION

Creativity is a human favorable specificity that schools should be serious for education or training it. Creativity education or training the creative thinking always has a special place as one of the basic and known targets of education. The experimental science lesson that has a place special, is included a set of organized contents and known method that could help to creativity training. In fact, science lesson plays an important role in providing skills that students can obtain correct and accurate understanding of the patterns and arguments [1]. Novel approaches are emphasized more over structures, communications, explorations, creativities, thinking, interpersonal relations and cooperation. Seventh grade new science books also with an emphasis on new approaches in the area of education trying to provide to achieve the following basic aims by diversify to teaching methods of science lesson: to interested students to the learning, especially in science learning and creating in them a positive attitude towards school and education, increase student creativity, strengthening the cooperation spirit among students and transform the competitive to camaraderie in the classroom, forcing students to think about issues and strengthen their confidence to develop critical thinking and higher level thinking skills, training basic skills in reading, writing and mathematics in school-age children, foster a spirit of inquiry among students by acquainting them with the daily life opportunity, reinforce meaningful learning using the objective and tangible educational materials [2]. Review the change process of experimental science book in recent years shows that has been attended to process the problem solution at compiling the experimental sciences book. At the new books is afforded the student to be learn concepts by exploring, experiment and research and achieve to creative thinking by recognize issues, formation hypothesis, searching for information and analysis results. Much evidence shows unfortunately, this will not happen and many of learners not can become to active, creative and generator organism [3].

Research background

The sciences lesson education program has basic differences from perspective of modernity and post modern. One of the important differences about curriculums is attention to mainly different interests. At modernity perspective, technical interest is important and based the interest, lesson content namely a set of skills and fundamental information is organized. The skills such as observation, prediction and examination of multiple hypotheses are cases that sciences curriculum designers attend it. From this view is expected the children after achieve above skills, expose expected behaviors to mean rational actions focused to evident results. Modernity perspective directs to technical interest, conceptual structure and the experimental science method and converts it

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to an applied and limited science, beforehand. In viewpoint of postmodern attend to communicative interest. In perspective of communicative, the content of lesson science is a set of situations that children can be success to deep understanding and achieve of knowledge and values with perception the relations. Numerous studies and researches in recent years indicate that in many countries, including our country, the content structure of elementary school Empirical Sciences lesson is organized based on view of modernity and focused on growing technical interest and interest in communications has been neglected [4]. To eliminate or to pretermit the communicative interest in Empirical Sciences are faced teachers, designers, and children with serious challenges, so that some researchers have expressed that Empirical Sciences education programs cannot grows a scientific, exploring, and creativity mentality in students [5]. Brown [6] stated that the curriculum is all students' school experience that is associated with skills improvement in critical and creative thinking, problem solving, and teamwork with others, communicate better, most effective writing, critical reading, more research to resolve the problem. In summary, the curriculum leading to the planned interaction between students, teaching content, teaching materials, educational resources, and the processes to assess the achievement amount to the education goals [7].

Empirical Sciences makes up an important part of the curriculum. Empirical Sciences helps students learn to identify ways to improve their surroundings. For this purpose we acquire concepts that help them to link their experiences with each other. Children must learn the methods, organization, and test applications to learn. These activities will strengthen their ability to understand our surroundings and helps intelligent decisions and solve problems in their lives [2].

Education Department of Indiana University [6] declares that the students must achieve the following goals after education empirical sciences: 1- Creating and using an experimental design in scientific research; 2 - Use scientific language to convey knowledge and interact; 3 - Investigation of process using technology; 4 - To apply the concepts, skills and processes of science in everyday life; 5 - To experience the richness and excitement of scientific discovery around the world through teamwork and collaboration; 6-Make informed decisions about taking notes on issues such as public policy and law, economic benefits and costs, validation of scientific data and scientific reasoning and logic, respect for living things, responsibility and personal history of scientific discovery; 7 - Development of manners and habits of science mind such as curiosity, asked to confirm the accuracy, respect for logic and rational thinking, in consideration of the premises and the consequences, respect for the contributions of the past, according to accuracy, patience and perseverance and explore careers and scientific beloved issues.

The empirical sciences lesson is caused to development of logical thinking and also has aesthetic appeal. The empirical sciences lesson is one of important pillars and one of the fundamental pillars of at different levels of teaching that is the introduction to enter the next years to achieve the important goals that in any time teachers and practitioners of the education should attend it in at all levels and centers that with the highlight of this lesson, is expected the community in the coming years not only in the education have not encounter problems but also can do the responsibilities assigned in conjunction with this lesson. Sometime the experts involved in the education and training activists conclude that for more in-depth education, especially empirical sciences lessons education should applied various teaching methods according to different conditions of students and material. Researches also shows that teachers and students creativity in dealing with issues has significant impact on learning, also teacher's ability to identify various aspects of multiple intelligences and strengthen students' talents and enhance their creativity, contribute to the learning [8].

Creativity is an art lies in the depths of human nature that flourish with individual effort and teaching others and can be found it step by step and day-to-day represent it brightly [9]. The creativity means to create, to production and the force which led to the creation of new works and actually is tend to creation that exist potentially in all individuals [10]. Nowadays it has been proven that creativity is not an intrinsic property of matter, but all of human have these capabilities and have all varying degrees of talent, in addition to these, the factors such as skills founding, learning ability, flexibility ability, knowledge and awareness level, risk-taking, lack of fear and mistakes also have a great impact on knowledge creativity and innovation. In relation with definitions creativity can be mentioned to three period different, Eisner, [11] and Sanders [12] that are: An initial definition that has been done based on description and explanation processes and fundamental mechanisms at creativity. B: definitions that have been provided based on creative people features description. C: definitions that have been expressed based on creative gains specifics [12]. But what we're trying is view of many philosophers and education theorists that believe creative thinking skills training should begin from childhood years, right like read and write skills [11].

evaluation evolutionary process and how compilation content and method of the empirical sciences education also show that at ten recent year has been done great effort for develop the students process skills such as skill view, measurement, tools application, deduction and interpretation results, hypothesis making and problem solving and development the creativity and innovation has been considered as one of the important goals. But evidence states weakness of the creative thinking between students. Survey the tests results like Thames show that operation students Iranian about empirical sciences and math lessons is not appropriate at primary school course and more students are disable to reply applied judgment and combination questions and at skills like hypothesis making and problem solving are placed in low-order [13], while the highest goal of education at all educational levels is build capacity and creativity in problem solving or creativity in learner, because creativity

and innovation has been considered as the main process or stream of thinking process [14]. The creativity is a recognition process that is interacting with many other cognitive processes such as abstraction, research, learning, decision making, Inference, Analysis and Synthesis [15].

One of the lessons that can be a suitable field for creativity in students is empirical sciences lesson. In the lesson can be brought the empirical sciences concepts from abstraction state to real world through creative thinking, freedom of the student to provide solutions, build self-confidence and sense of empowerment in students, also the use of active methods teaching, design and innovation stimulating and challenging questions, not to impose a particular model to the students, giving students the opportunity to students to design unusual and controversial questions and valuing students' curiosity flourish student creativity. Summary, we should help student to take up empirical sciences in their own lives and enjoy them, also should be given the opportunity to make errors, mistakes and rebuild them to grow creativity in them. Therefore reviewing and updating the content of textbooks. The scientific and principled review, correction and revise the program and contents of textbooks requires attention to the new role of the learner in the learning process. On the other hand, to deal with phenomena such as the spread of information and technology explosion, students should be prepared to live in such. Despite today is emphasized on to apply active methods, new education views of teaching empirical sciences has been change from activity-oriented approach to research-oriented [16].

In the activity-oriented approach, the students deal with a series of tools, equipment, or defined and limited collection kits that can be busy with each of them for a few hours. While in new approach (research-oriented), the activities are determined among the questions and concerns of students. In this way, students look for patterns and relationships with his observations of the world around. Therefore, in the use of active teaching methods should be considered to research-oriented approach till the learner considerer to explore and findings the relationship between natural and scientific phenomena while it is active [17]. If learn something to child, we prevents to have been discovered and developed it. According to these cases, it is necessary to guides children to discover and create concepts and new things and to simple express fostering creativity in children [18].

In fact, the empirical sciences lesson has a great significance along with other lessons and in done research, the weakness of Iranian students in empirical sciences lesson is proven. Martin [13] and Kiamanesh [19] reported that the findings of the Thames' third international study about elementary school empirical sciences lesson showed that Iranian student learning in empirical sciences lesson is low. Also in Thames' international study, review the correct answers average of in the third grade and fourth grade students in relation to the content of education shows that in the third and fourth grade, 70% and 60% of the taught content has not learned . On the other hand, in several studies, including Liu [20], Mc Grath [21], Liu and Hsiao [22], Penuel and Means [23], it was found that the use of active learning methods of teaching and how to organize books has a positive impact on learning and thinking skills in empirical sciences.

According to the "fundamental transformation" approach, the empirical sciences books of seventh grade changed at 2013-2014 academic year. patterning and problem-solving skills, thinking and logical communications between concepts skills, the store making with thinking and discussion capability among teachers and students to better understand concepts including the indicators that that are taken into consideration in writing a new book. The study is important and applicable in perspective of the aspect, in development of the theory that does can establish a relationship between the new empirical sciences books teach and increasing creativity of learners? The main objective of this research according to what was said with regard to vigesimal principles of Torrance [24] about nurturing creativity and fostering creativity models of Williams [25] is follows questions test:

1. Does has teaching empirical sciences new book of seventh grade any impact on students' creative of Isfahan city?
2. Which training topics of empirical sciences new book of seventh grade have maximum impact and which has a minimal impact?

2. MATERIALS AND METHODS

This study is practical in terms of objectives, in terms of data is quantitative and in terms of nature and type of study is descriptive of survey type because without the manipulation of the independent variable we examined its impact on the dependent variable.

Population, sample and sampling method

The population in this research are formed all seventh grade teachers of the education of Isfahan city consists of 1416 people. Samples according to the formula H.S. Bula [26] were determined 300 people and these were selected by random cluster sampling.

Assessment tool

In order to collect data from a researcher made questionnaire containing 49 7-choice questions (1 representing the minimum and 7 represent the maximum impact of learning new science books on increase creativity of learners) is used. This questionnaire has been developed using the Torrens theory about nurturing creativity and creativity breeding patterns of Williams and new book content of seventh grade empirical sciences book. The researcher after developed a tool, sent the mentioned questionnaire to 15 specialists through Delphi method and then the final questionnaire was developed. In the questionnaire, the 49 questions are related to the impact of this book on

the creativity components. To obtain the validity of this scale were considered opinion of some experts about the questionnaire and its uncertainties was resolved that this represented the acceptable content validity of the questionnaire. The scale reliability was also assessed with Cronbach's alpha and Cronbach's alpha level of 0.96 represents the internal consistency of the scale questions.

3. RESULTS

In answer to the first question of research whether teaching seventh grade empirical sciences book has impact on students' creative Isfahan city? The univariate Chi-square test for each of the questions have used that results are presented in table 1. The results obtained of Chi-square test indicates that all of discussed components in the research in seventh grade teaching new empirical sciences book in perspective of the teachers have a great impact on students' creativity.

In answer to the second question to determine the maximum impact or minimum impact of creativity indicators is used Friedman test that the obtained results are presented in table 1. As the table data shows the Chi-square test amount is equal to 223.24 and degree of freedom of 48 is significant at the level of 0.001. So it can be say with 95% confidence that the discussed components are in different categories. Thus, the highest level is related to the discussed component of learner participation in group and team work with an average rating of 31.78 and the lowest ranked is related to teaching new book component leads to students risk taking with the average ratings of 21.17 as the last priority in enhance creativity in the students.

Table 1. Results of Chi-square and Friedman tests

Statistical test	Univariate chi-square	Friedman	
Topic	**Chi-square**	**Average Rating**	**Priority**
What extent the training empirical sciences new book leads to learners participate in group and team work?	52.22	31.78	1
What extent the training empirical sciences new book leads to increased skills of learners?	45.85	31.59	2
What extent the training empirical sciences new book leads to probe of learners?	62.17	30.85	3
What extent the training empirical sciences new book leads to engaging learners with diverse experiences and new?	38	30.82	4
What extent the training empirical sciences new book leads to focus and attention to learners?	37.43	30.28	5
What extent the training empirical sciences new book leads to identification of individual differences?	45.62	30.12	6
What extent the training empirical sciences new book leads to genuine and deep learning of learners?	34.81	29.71	7
What extent the training empirical sciences new book leads to the interest in learning of learners?	46.309	29.32	8
What extent the training empirical sciences new book leads to contribute to strengthening thinking in learners?	40.84	29.3	9
What extent the training empirical sciences new book leads to develop problem solving of learners?	34.35	28.98	10
What extent the training empirical sciences new book leads to the increase initiative of learners?	46.32	28.66	11
What extent the training empirical sciences new book leads to participation in public affairs in the learners?	31.17	28.61	12
What extent the training empirical sciences new book leads to a positive attitude to knowledge in the learners?	30.03	28.47	13
What extent the teaching empirical sciences new book leads to logical ask in the learners?	38	28.45	14
What extent the teaching empirical sciences new book leads to observation and experiment in the learners?	33.10	28.44	15
What extent the teaching empirical sciences new book leads to regulation and summarizing lessons of learners?	40.16	28.2	16
What extent the teaching empirical sciences new book leads to creative thinking in the learners?	30.26	28.08	17
What extent the teaching empirical sciences new book leads to reinforcement social intelligence in the learners?	32.99	27.85	18
What extent the teaching empirical sciences new book leads to increased persistence in learners?	35.83	27.73	19
What extent the teaching empirical sciences new book leads to brainstorming in the learners?	29.57	27.63	20
What extent the teaching empirical sciences new book leads to find the relationship between the phenomenons in the learners?	27.98	27.51	21
What extent the teaching empirical sciences new book leads to the spread of the freely expressed of the learners?	29	27.43	22
What extent the teaching empirical sciences new book leads to liberal in the learners?	24.34	27.35	23
What extent the teaching empirical sciences new book leads to increase self-confidence and self-esteem of learners?	26.04	27.09	24
What extent the teaching empirical sciences new book leads to break the habit in the learners?	25.82	27.08	25
What extent the teaching empirical sciences new book leads to the raising of the imagination in the learners?	29.91	26.78	26
What extent the teaching empirical sciences new book leads to evokes lessons in the learners?	27.52	26.62	27
What extent the teaching empirical sciences new book leads to the spread of ideas in the learners?	30.14	26.54	28
What extent the teaching empirical sciences new book leads to enriching content in the learners?	23.20	26.53	29
What extent the teaching empirical sciences new book leads to creativity capabilities of play with concepts in the learners?	20.81	26.45	30
What extent the teaching empirical sciences new book leads to deal with the learners with the unknowns?	20.35	26.45	31
What extent the teaching empirical sciences new book leads to independent action in the learners?	23.34	26.44	32
What extent the teaching empirical sciences new book leads to raise the patience threshold and tolerance in the learners?	27.41	26.38	33
What extent the teaching empirical sciences new book leads to analysis problem in the learners?	21.15	26.07	34
What extent the teaching empirical sciences new book leads to emergence new ideas in the learners?	19.78	25.84	35
What extent the teaching empirical sciences new book leads to learners welcome rather than others' comment?	29	25.66	36
What extent the teaching empirical sciences new book leads to a self-assessment in the learners?	31.05	25.45	37
What extent the teaching empirical sciences new book leads to mental health of the learners?	19.67	25.09	38
What extent the teaching empirical sciences new book leads to combine scientific data of the learners?	29.23	24.98	39
What extent the teaching empirical sciences new book leads to learners' evaluation from others?	17.17	24.88	40
What extent the teaching empirical sciences new book leads to increase commitment to doing the right thing in the learners?	15.69	24.58	41
What extent the teaching empirical sciences new book leads to truth seeking in the learner?	23.88	23.54	42
What extent the teaching empirical sciences new book leads to flexibility in the learners?	37.65	23.41	43
What extent the teaching empirical sciences new book leads to fair judge in the learners?	34.1	23:17	44
What extent the teaching empirical sciences new book leads to fit the emotional development of the learners?	38.56	22.84	45
What extent the teaching empirical sciences new book leads to predict events in life of learners?	18.53	22.44	46
What extent the teaching empirical sciences new book leads to critical thinking in the learners?	24.34	22.35	47
What extent the teaching empirical sciences new book leads to met cognitive thinking in the learners?	21.95	22.14	48
What extent the teaching empirical sciences new book leads to risk in the learners?	34.24	21.17	49

DISCUSSION AND CONCLUSIONS

The future education is based on fostering thinking and power of creativity and is facing with rapid innovation, it decides about individual and group needs and seeks to solve immediate by the thought help local collection. The use of advanced technology knowledge of education is its most striking feature. The education role in the future is higher that is supposed, so rethinking about education and creation the ability that today and tomorrow teachers can understand greatness and originality and their task, needs to the research and great effort. This task is the conduction human path toward the evolution of the mind and behavior and giving life to new civilizations that is unique and multiple [27]. According to that the fundamental purpose of empirical sciences education is creating the ability to understand basic concepts and proper application of learned skills also fostering creative thinking; it is accepted the teachers acting their activities using scientific instruments to achieve the main goal of education. So it is fitting and proper that after familiarity with the principles and procedures for the implementation of various teaching methods, to identify the location and according to the abilities and interests of the students depending on the lesson concept, apply a combination of teaching methods and given that some people believe that creativity is a trait inherent to some people who are born with this ability, while can be foster this talent like other aspects using the application of certain principles and methods. To have the creative children, we shouldn't be imagined naught our Children's imaginations and do not mock them and not to neglect children because with this action it will dry out the source of the child's creativity. In the families who their live area is dry, formal and serious, does not occur any underlying for development of a sense of humor and consequently many the child creative tensions will hide in such environment.

The purpose of empirical sciences education is not only raising elites and those interested in empirical sciences, but in the new book, the goal of empirical sciences education is students have a better life. Thus, the connection between empirical sciences and everyday life, the empirical sciences and problem solving modeling skills achievement, develop thinking skills, communication between different representations of empirical sciences and their interpretation, communication between the empirical sciences and other sciences and in general, applying the empirical sciences concepts in increasing creativity are the objectives of this new book.

Now more than ever, empirical sciences have been real and have been vital role. In the last quarter century, empirical sciences and its methods has become as an integral, pervasive and fundamental technology and the economy part that at the beginning of the twenty-first century, inability to understand or to apply empirical sciences represents an educational gap. The empirical sciences learning is a social process and through which students work together in groups to build their knowledge and opportunities of increase creativity are created through collective dialogue, description, explanation and discussion about the meaning.

According to the results of this study are suggested to education authorities due to being centered of students in the classroom activities in group or individual and implementing new methods of teaching, is need for the table and chairs. Accordingly, it is suggested to authorities to consider facilities required in this context. Heads of departments of the course is recommended when visiting different schools, innovative and creative teaching methods and activities in the empirical sciences class present to colleagues and through this sharing their experiences. Also, request from the related office, holding calls PowerPoint construction of empirical sciences and its activities, to creative teachers present their valuable experience in this field and make the best of them in the form of CDs and give to other teachers. It is recommended to teachers to note to having a positive impact on the importance of teachers and lesson plans before teaching and based on the purpose and meaning, choose appropriate teaching methods and be particular considered to diagnostic evaluation that is start point of teaching. Also according to the needs and interests of students consider the diverse and creative assignments and practical activities. In addition, note individual differences, give to students the opportunity to explore the relationships of their own intellectual effort, to engage in problem solving and eventually is recommended to the parents of students try to guide their child's homework and allow them to engage with problems and intend to its solution. From the way, the child's learning will be deeper and more stable.

REFERENCES

1. Ghasemi, F., Jahani, J., 2009. Evaluate objectives and content of science textbooks elementary courses from perspective of pattern education creativity of Plsk, journal of curriculum studies year third no. the 10 fall 2009.
2. Department of Empirical Sciences lessons, Office of Elementary and theoretical writing textbooks of primary and middle schools curriculum courses, 2012, teacher book of guide teaching of Empirical Sciences lessons, Tehran, General office printing and distribution of textbooks. 5-6
3. Ranjdoust, S., 2012. The application of construction -oriented theory in empirical science textbooks compilation of high schools in perspective of professionals, teachers and educational leaders in Tehran, The research on curriculum, year 8, number 30.
4. Jahani, J., 2009. An introduction on the research methods in critical thinking, Molke Soleyman publication, Shiraz.

5. Parvizian, M.A. 2010. Review education probe in empirical sciences lesson of the third to fifth grades of province Markazi primary schools, Research institute program planning curriculum and innovation the education.
6. Brown, D.F., 2006. It's the curriculum, stupid: there's something wrong with it. Phi delta Kappan, 87 (10): 777-783.
7. Indiana department of education, 2010, definitions of terms,Indiana accountability system for academic progress, retrieved from http://www.doe.in.gov/asp/definitions.html
8. Salehi Omran, E., Samad Izadi, Rezai, F., 2008. Analysis content curriculum book of primary period on based the education global component, Journal of the program curriculum studies, year fourth no. the 13 and 14 summer and fall 2009.
9. Hamid Aghaei, J. 2008. The creativity, key to the survival of new organizations, prudence magazine, issue 142.
10. Andrews, G. 1930. The development of imagination in the preschool child, university of Iowa studies in character 3 (4).
11. Eisner, F., 1994. Educational imagination: on the design and evaluation of school programs: third edition.
12. Saunders, R. 2002. A synthetic approach to the study of creative behavior. department of architectural and design science faculty of architecture university of sydney.
13. Martin, MO Mullis IV, Gonzalez S. Ejschrostouski SJ. 2004. TIMSS 2003 international science report IEA Boston college.
14. Saif, A.A., 2010. Educational psychology, Tehran, published by Agah Publication.
15. Wang, Y.: Chiew, V. 2010. On the cognitive process of human problem solving. Cognitive systems research, 11, 81-92.
16. Rastgar, T. 2008. From to activities -oriented to research-orientedin the third grade, Growth of biological education, winter 2008.
17. Soltani Kofrani, A. 2004. Feasibility of establishing a master's degree in science education at universities of the country, Isfahan: department of education and psychology.
18. MehrMohammadi, M. 2002. Hidden curriculum, null curriculum and the hidden curriculum of the absurd, Mashhad: Sstan Qudserazavi.
19. Kiamanesh, A.R. 1996. Report on the third international mathematics and science study TIMSS, Journal of the empirical sciences in the middle school courses, no. 2
20. Liu, G. 1998. Affirmative Action in Higher Education: The Diversity Rationale and the Compelling Interest Test. Harvard Civil Rights-Civil Liberties Law Review. 33, 381-442.
21. McGrath, H.L. (1998). An overview of prevention and treatment programmes for developing positive peer relations. In K. Rigby & P. Slee (Eds.), Children’s peer relationships. London: Routledge.
22. Liu, M., & Hsiao, Y-P. (2002) Middle School Students as Multimedia Designers: A Project Based Learning Approach. Journal of Interactive Learning Research, 13(4), 311-337.
23. Penuel, W., & Means, B. 1999. Observing classroom processes in projectbased learning using multimedia: A tool for evaluators (Secretary’s Conference on Educational Technology). Retrieved January 22, 2001, from http://www.ed.gov/Technology/TechConf/1999/whitepapers/paper3.html
24. Torrance. EP 1981. Thinking creatively in action and movement. bensenville, illinois: scholastic testing service.
25. Williams, R. M., Jr. (1968). Values. In E. Sills (Ed.), International encyclopedia of the social sciences (pp. 283-287). New York: Macmillan.
26. Bula, H.S. (1990) Evaluation of plans and educational programs for development, international institute of adult education methods. Translator: Kodayar Abili (2004).
27. Schneider, B.A. (Dorfman, W. & Hersen, M., Eds.). The Rorschach Inkblot Technique. Book Chapter in Understanding Psychological Assessment. Kluwer Academic/Plenum Publishers: New York. (2001).