# The Perceptional Influences of Caricature in Learning the Possibilities by Using the Cognitive Tool and By Given To Sexuality

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**ABSTRACT**

The learning indicates many differences in individuals and educational sciences continuously try to discover the best conditions for effective pedagogy and education. In respect to this, in addition to psychology science, the Cognitive Neuroscience entered into this field in order to plan and implement the educational resources proportional to needs. In present research, by using the caricature art, we consider its influence on learning the probabilities and statistics and for this; we used one of neuro-pedadogy tools. The eye-tracking tool or visual tracking as a cognition tool applied on 30 psychology students and results showed that presence of caricature perception is different in men and women. The results show that men have more perception respect to caricature in educational problems.

*Keywords: Learning; Visual Tracking; Cognitive Neuroscience*

**P**sychologists consider the learning as a relative permanent change that form due to experiences in individual's potential abilities. The relative permanent change means a change that less and more has persistence and it isn't temporal or instable that created by factors such as tired, drug consumption or addict to gloom. The potential ability is an ability that is present in individual but it hasn't appeared yet. For example, some of us have this ability to be a skilled pilot but now we cannot drive a plane. In this case, it is said that our ability for leading a plane is a potential ability and it hasn't applied yet. The "experience" word used to describe the changes as a learning that resulted from practice and exercise, not from maturity aspects such as length and weight growth. Maybe, the most important question of any teacher is that how it can make the learning – particularly the lessons learning- as more effective. Many of psychologists studied the learning in precise and controlled environments to discover the learning nature better and to know how make it better. So, many of factors that affect the learning, identified (Parsa, M., 1996). By given

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to using the difference sciences in education technology, it can say: 1) Psychology in education technology pay attention to condition of individuals' physical and mental growth and by given to their readiness for learning in different contexts and by selecting proper schools of learning (connectionism, cognitive, constructivism,…), the studying matters are codified and offered to learners. 2) Communications: designing the educational messages, encouraging the learners to partnership, solving the communicational problems… are among items that are used in educational technology for transferring, penetrating and percept the educational messages. 3) Art: The educational technology by using the senses features in learning (visual sense 75%, audition 13%, smell 3%, feeling 6%, taste 3%),the influence of beauty in learning, designing the pictures correctly via coordination and conflict in design, harmony in colors and by selecting the proper lines and angles, tries to approach to its effect in learning as 75% based on visual sense. Typically, the educational technology wants to use all scientific phenomenon to accelerate the learning occurrence and lost in as possible as late. Thus, using the new educational technologies and techniques are one of important pedagogical-educational issues (Fardanesh, H., 2001). Undoubtedly, learning is one of the most important mental processes because it is the base of all things that distinct us from animals and other people (Saatchi, M., 2008). The caricature art that in present research considered as an educational tool, prevailed a long period before journalism and even before invention of press industry in the world. In fact, it has an age as written history of human. This art recognized and prevailed in ancient age. The first caricatures that included the political and social issues obtained from Pompei city that buried under volcano lava and ash at 1900 years ago. These caricatures carved on stone piles and presented to public. Although, many caricatures are seen in portraits of huge painters of 16th century such as Holbain and Brugle, but the subject of caricature is emphasis on risible aspects of individuals as the caricaturing art tradition that established by Agostino Carachi in Italy at 17th century (Gharibpoor, B., 1999). Always, caricature helped artists to see precisely and reflex their viewpoints in their tableaus. However, using the caricature as a tool to develop and establish the intricate concepts, considered less in science education. In present research, we consider the reasons of exploiting the art as a tool for deeding the scientific concepts and some necessary tools to create an successful educational experience. Science and art often are introduced in two many different (and even opposite) context. Often, people consider the art as a creative sense and mood but describe the science as a context based on realities that solve the problems by a scientific step-by-step method. This viewpoint regard to science does not consider the innate creativeness in science and in apposite to assumptions, it doesn't help the students to see the science as a result of human efforts. The national research council of United States (NRC), in national standards of science education defined the science as an explorative practice. In addition, it emphasized on science as a human effort and supposed methods for emphasis on changing the manner of science education in addition to implementing the standards. To use the artistic sense and mood in science education results to reinforce the students abilities in transferring the scientific findings and introduces the science as a method for explaining the phenomenon and facilitates

the transferring their believes to society and their classmates (Seif, A. A., 2008).

### *1- Visual Tracking*

The eye tracking is a process to measure the attention (gaze) or the movement of one eye in relation to head (Phil Barden, 2013). The eye tracking is a tool to measuring the location and movements of eye (Andre Douchowski, 2007). This technique can be a useful method to analyzing the behavior and cognition (Leon Gerawski, 2010). By eye tracking technique, it can obtain the behavioral evidences (Paul Glimcher, 2009). The eye tracking very sensitive to attention and caution processes (Serkan Arkan, 2006) and it can use this technique to enhancing the education and learning (Hong Faho et al, 2012; Haolin Wei, 2009; Meng Jung Tsai et al, 2011). In addition, the eye-tracking tool is capable in recording the FOVEA (Mentshars Berger, Martina, 2005). The eye tracking can be used in evaluating the effectiveness of advertisements, video and graphic pictures (Andrew Douchowski, 2007).

## RESEARCH METHOD

The present research, due to its nature has both descriptive and explorative design. It is descriptive because the research model tested several times and its model is completely well known. In addition, it is explorative because by using the new scientific manner we want to discover those relations that can develop the research model. The research statistical society included M.A students of psychology in Islamic Azad University of Saveh (Iran) and by given to limitation of neural examinations, the sample volume determined as 30 students (15 male and 15 female). The needed data gathered by interview as a tool to gathering the descriptive data. Also, we used the eye tracking tool to gathering the quantitative data. The data analysis divided into two parts: descriptive and quantitative. The quantitative analysis performed by eye-tracking tool and the descriptive analysis performed by interview. The eye tracking performed as photo-echologographic that controls both pupils for investigation. In present research, the normal distribution due to its importance offer via caricature. Then pictures offered to examinees. The offer length per each picture determined proper to the volume of text and pictures. Totally, 11 minutes assigned to eye tracking and 5 minutes to interview with each examinee.

## RESULTS

*To quantitative analysis of pupils, we used the Gazepoint software. The analyzed indices are as follow:*

a. The heat map of pupils
b. The map of number and location of attentions
c. The visual path of eyes or sacced map

In figure 1, the related indices offered as image processing data.
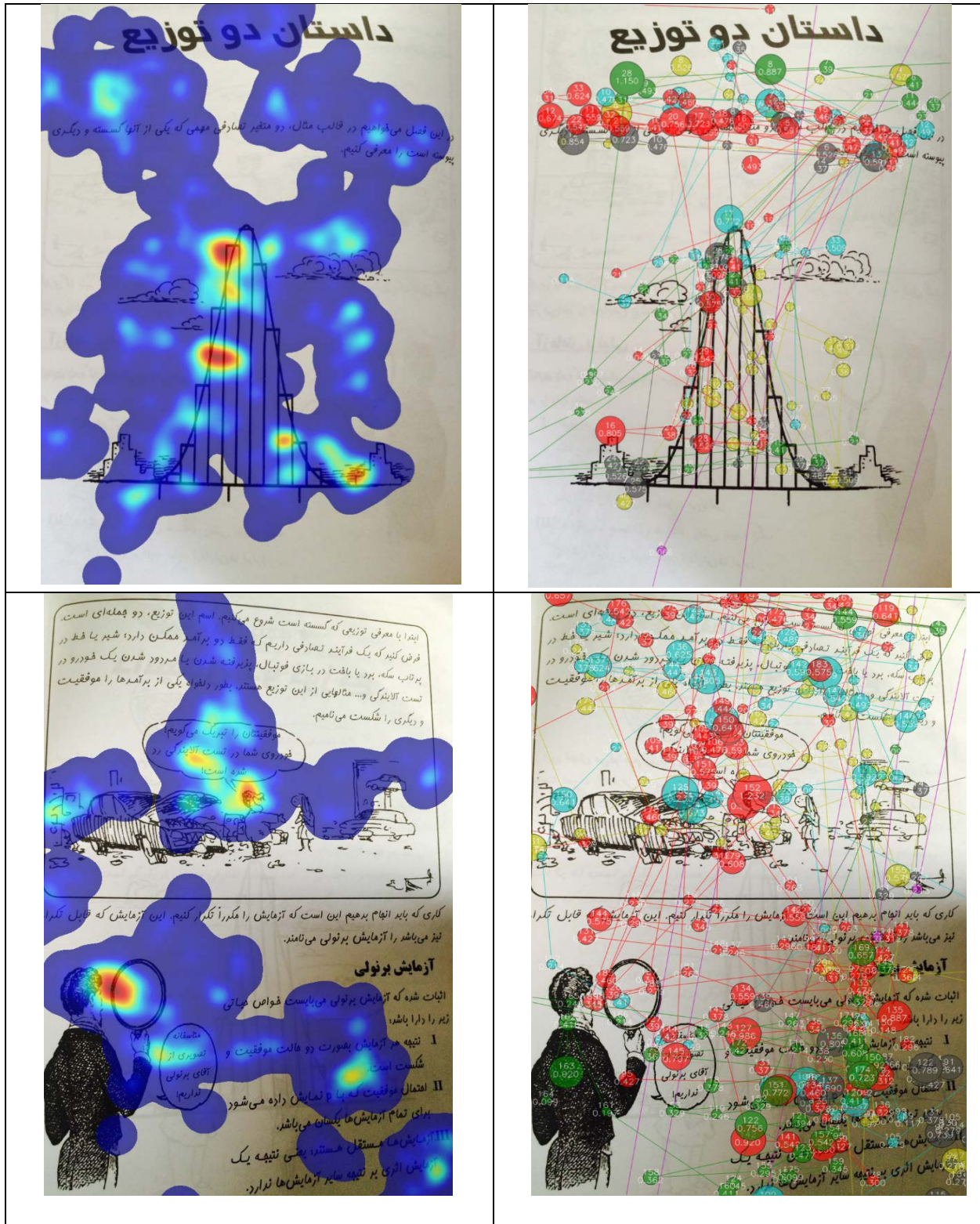


*Figure 1. An output sample of eye tracker in this study*

### *The status of heat map indices, the fixation map and sacked*

In all pictures by given to elements of text, caricature and formula, men had the most attention to formula and caricature and finally to text; but women paid the most attention to text, then to formula and finally to caricature. The heat map that show the attention focus with a distinct range, for men located more on caricature and formula, but about women, it firstly located on formula and then on caricature. The sacced map showed that in many of men, the first element that attracted their attention was caricature, they re-visited it more, and the elements of text and formula were in follow priorities. In women, the caricature element firstly attracted their attention too, but the men behavior in using the caricature to percept the statistical concept was more logical. In women, the visual path and revisiting behavior were amazing. The results of interview showed that men had a better perception of caricature than women did and they could percept the concepts by using the caricature. The eyes behavior as the main receiver in present study confirmed the interview results and based on variance analysis with MINITAB software, this behavioral different established quantitatively (in diagram 1, the $P<0.5$ show this difference).
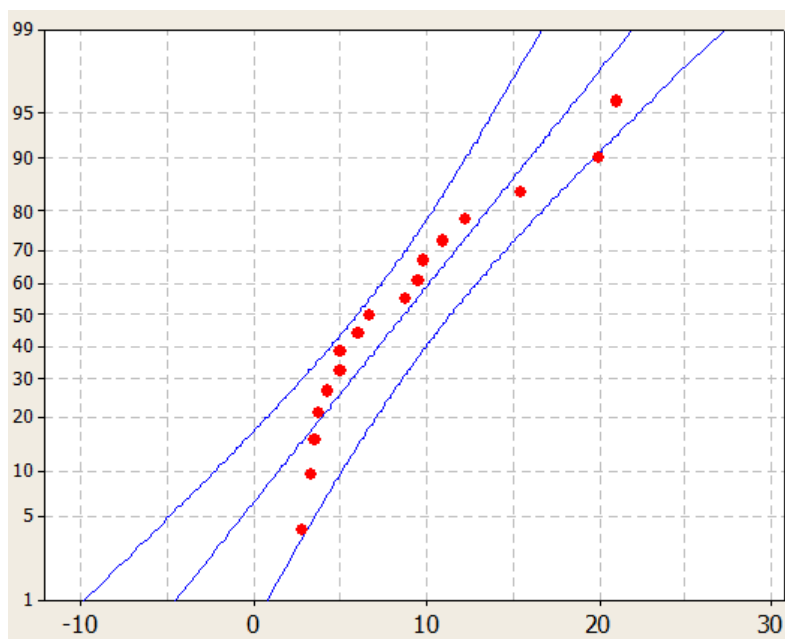


Diagram 1. The results of variance analysis

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Analysis of Variance
Source           DF        SS       MS        F       P
Regression        2   132.077   66.038   271.92   0.000
Residual Error   14     3.400    0.243
Total            16   135.477
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## SUMMARY

In this study, we concluded that using the caricature in educational matters, by given to sexuality could provide different results. The eyes' behaviors as an important receiver in body showed that in all three main indices there is a significant difference between men and women. Thus, curriculum development and content planning in education for men and women cannot be the same. In addition, naturalization of caricature by given to culture and nationality can have a significant effect. Perception of caricature is not simple and need a high attention. In women, the heat map on caricatures was very wake, even the attention order, and the ideal visual path and revisits in women didn't logical and showed amazing path. Our results showed that to optimization of educational and pedagogy matters it can plan any design by using the eye-tracker. In a study, Jonathan Rosh and Wegal (2012) considered the pupils behavior as the best tool for planning the educational methods. In present research we could investigate the interest of examinees respect to a new method. The heat map shows the pupils' diameter change that its rate is high in men. Haolin Wei (2009) in his study concluded that by eye tracker it could measure the interest easily. In advertisement issues, after attention the most important thing is interest element that may results to cognition and buying. Thus, to planning the educational and pedagogical methods, the interest can be a psychological precondition. The research results confirmed all three hypothesizes. Ismaeel Ton Bolgo (2013) in his study investigated this difference, too. In that study, the influence of sexuality on attention investigated by a mathematic education software that applied on a group of people. When they worked by this software, the eye tracking technique used to record their eyes' behavior that in attention focus and attention order indices, this difference between men and women established. In present research, we found that by given to pupil behavior, men easily cognized the test problems in regard to learning method. In Serot Bairam's study (2012) it found that having a heat map for main elements of education and having a logical visual path can be accompanied with a correct and persistent comprehension in memory.

*Conflict of Interests*
The author declared no conflict of interests.

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