

## LETTER TO THE EDITOR

## The Assurance Mode of the University Ecological Environment Education Quality Based on the Mechanism of Human Brain Visual Perception

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The teaching effect of universities based on the mechanism of the human brain visual perception is evaluated, which provides the basis for enriching the atmosphere of classrooms and the teaching forms of universities. The evaluation method of the human visual perception mechanism based on the method of principal component analysis and entropy weight is proposed. Questionnaire surveys, observations, mathematical statistics and other methods are used to randomly divide the 259 students from Henan Institute of Education, which are selected by stratified clusters, into experimental and control groups. Each training time is 8 to 16 hours, it is 6 times, and the total duration is three months. According to the above method, the subject is trained in accordance with the implementation steps of the human brain visual perception mechanism. Based on the research results of typical customer satisfaction index models at home and abroad, the impact factors of student satisfaction are analyzed. It can be known from the example analysis that university students have the high degree of satisfaction with the quality of education services, and the development of non-intellectual factors can be effectively promoted by the mechanism of the human visual perception to enhance class cohesion and improve students' recognition of the school. At the same time, the establishment of learning organizations is promoted, which can effectively make up for students' lack of intellectual factors and improve their academic performance.

Human Brain Visual Perception; University Ecological Environment Education Quality; Assurance Model; Index Assessment

### 1 Introduction

The learning methods that are suitable for them are adopted to improve learning efficiency (Akben 2016). Communication between teachers and students can not only activate the atmosphere of the classroom, but also improve the quality of student learning, which is beneficial to the promotion of classroom content and student acceptance. Therefore, the mechanism of the human brain visual perception is used as the new teaching method to guide students' independent learning and further improve the professional level of university students (Song et al. 2017, Meijer and Geesink 2017).

Yan et al. (2019) published an article in the journal Ekoloji, Issue 107, 2019, entitled "A Collaborative Environmental Education Pattern of Deepening the Integration of Production and Education based on Application-Oriented Undergraduate Teaching: A Case Study in Civil Engineering (Major of Beibu Gulf

University)". The "Several Opinions of the General Office of the State Council on Deepening the Integration of Production and Education" provides an unprecedented development opportunity for the implementation of transformation and upgrading of applied universities and the in-depth promotion of integration of production and education. Exploring an innovative "school-enterprise integration" education pattern of combining production and education is a useful process for the application-oriented universities to deepen the integration of production and education and solve the problem of "two pieces of skins" in talent cultivation.

## 2 Research status

The cognitive process is broadly defined, which includes both the process of information acquisition and processing as well as the combination of information acquisition and processing. This process is called the process of regenerating subjective information (Abbasikesbi et al. 2017). In the narrow sense, the mechanism of the human brain visual perception refers to the process of changing the above knowledge state, that is, the process of subjective information generation or cognitive information regeneration. The human recognition model relies mainly on knowledge and experience, which is the very representative identification process.

The experiment of university students' use of the human brain visual perception mechanism is organized and implemented to explore the impact of the human brain visual perception mechanism on the learning effects of university students.

## 3 Methods

### 3.1 The selection of the research object

The method of stratified cluster sampling is used to randomly select two classes in each grade of freshmen, sophomores and juniors from the undergraduate class of the university. And one class from two classes is randomly selected as the experimental group learning from the mechanism of human brain visual perception, and the other class is the control group (Kim et al. 2017). Among them, the freshmen' experimental group had 45 students, and the control group had 44 students; 47 boys and 42 girls; the sophomores' experimental group had 41 students, and the control group had 43 students; 40 boys and 44 girls; the juniors' experimental group had 40 students, and the control group had 46 students; 45 boys and 41 girls. A total of 259 students are studied and their ages ranged from 18 to 23. There was no significant difference in age and gender between the experimental group and the control group (all  $P > 0.05$ ).

### 3.2 Research tools

The survey of subjective happiness

The questionnaire with good reliability and validity compiled by Diener et al is selected, and the Chinese version has been widely used (Jang et al. 2017). The scale mainly includes two aspects. The first is the survey of learning satisfaction, which consists of 5 items and adopts the scoring method Likert7 of the point scale, and means that the higher the score is, the higher the satisfaction of the learning results is. The second is the survey of classroom quality happiness, which includes five topics and uses the scoring method Likert9 of the point scale, also means that the higher the score is, the higher the overall happiness of the classroom learning quality is.

### 3.3 The evaluation tools of teaching effect

(1) The evaluation questionnaire of classroom teaching effect. The questionnaire is based on the cognitive characteristics of the research subjects. A total of 6 questions are 5 points, the 1 is very negative, and the 5 is very positive. The higher the score is, the stronger the degree is.

(2) The evaluation records of the students. The activity record is the score of the meaning and pleasure of the

activity (-5-5). The bigger the value is, the more affirmative it is. The good thing is to let the student record the good events in their own life.

**3.4 The learning methods based on the mechanism of the human brain visual perception**

They prefer to obtain information through visual words in television and movies. They also prefer that the assignments are written on the blackboard instead of being verbally arranged. Students who like non-text learning methods mainly express and store information through pictures, charts and maps. When browsing books and magazines, the pictures are mainly concerned, and the tasks of visual mode display are favored. The human brain perception learning method is the channel for learners to organize, understand, remember and finally gain learning experience, and is the important evaluation criterion for learning outcomes (Zhang 2017).

**3.5 The evaluation system construction of the assurance model of universities education quality based on the mechanism of the human visual perception**

According to the above method, the subject is trained in accordance with the implementation steps of the human brain visual perception mechanism. According to the seven structural variables of school image, expectation quality, quality perception, perceived value, satisfaction, complaint and loyalty, the evaluation system of the assurance model of the university ecological environment education quality based on the mechanism of the human brain visual perception is constructed.

**3.6 The evaluation model of the assurance model of universities education quality based on the mechanism of the human visual perception**

The evaluation value of the satisfaction rating and the comprehensive of the i-th university students based on the mechanism of the human brain visual perception are calculated as follows:

$$Z_i = \sum_{j=1}^m \omega_j P_{ij} \tag{1}$$

The survey of the Likert ten-level is used to measure the satisfaction index of university students. Among them, one point is very dissatisfied; ten points is very satisfactory; five points is generally lower; six points is generally above. According to the table, the evaluation value of the assurance model of the university ecological environment education quality based on the mechanism of the human brain visual perception is divided into four levels:  $U_1, U_2, U_3$  and  $U_4$ . They represent very satisfied, satisfied, average, and dissatisfied respectively.

**4 Results**

**4.1 Evaluation of the impact of teaching efficiency**

Take the language, mathematics and English of the three major courses of universities as the example, the method of the human brain visual perception mechanism is applied to obtain the transfer matrix, according to the homogeneous Markov chain analysis method. The weight parameters (i-j) and (i-j) are set separately to get the further matrix, and the final teaching efficiency is obtained.

**4.2 The impact of human brain visual perception mechanism on university students' academic performance**

In order to control the impact of the entrance results on the final exam scores, the admission scores are used as covariates to analyze the covariance of the human brain visual perception mechanism. The results show that the main effects of the human brain visual perception mechanism on the mathematics achievement of school A are significant  $F = 8.198, P < 0.05$ ; the main effects on the language performance of university B are significant  $F = 5.5, P < 0.05$ .

**Table 1 Teaching efficiency of Chinese, Mathematics and English in two experimental and control**

classes of two schools								
Subject	First weight				Second weight			
	Chinese	Mathematics	English	sum	Chinese	Mathematics	English	sum
the experimental class of the school A	3.76	4.76	1.96	10.48	11.83	11.74	1.64	25.21
the control class of the school A	2.95	-0.53	0.07	2.49	16.28	2.71	1.23	20.22
the experimental class of the school B	4.67	6.58	-0.24	11.01	18.52	22.06	-0.19	40.39
the control class of the school B	-2.75	8.31	-1.32	4.24	-8.48	27.67	-3.08	16.11

From Table 1, it can be seen that the teaching efficiency of the class that is implemented with the mechanism of the human visual perception is generally higher than that of the control class.

**4.3 The impact of human brain visual perception mechanism on university students' psychological factors**

The main effects of the mechanism of the human brain visual perception on cognitive drive, value drive, academic efficacy, metacognitive monitoring and class cohesion are significant. The main effects of school types on cognitive drive, value drive, position drive, affinity drive, academic efficacy and metacognitive monitoring are significant. The interactive effects of the human brain visual perception mechanism and school type on university class cohesion are significant. The evaluation results are shown in Table 2.

**Table 2 The average scores in the two schools**

scores	the experimental class of the school A	the control class of the school A	the experimental class of the school B	the control class of the school B
cognitive drive	4.03±0.88	3.85±0.56	4.37±0.68	4.08±0.74*#
value drive	4.01±0.68	3.78±0.64	4.43±0.65	4.18±0.65**#
status drive	3.78±0.85	3.83±0.78	4.26±0.64	3.98±0.95#
affinity drive	3.61±0.68	3.51±0.72	4.12±0.64	3.93±0.75#
avoiding drive	3.75±0.78	3.72±0.80	3.76±0.62	3.71±0.78
cohesion	4.17±0.71	3.58±0.71	4.05±0.66	3.97±0.58**Δ
academic efficacy	3.41±0.75	3.28±0.63	3.85±0.74	3.53±0.65*#
metacognitive monitoring	3.68±0.68	3.39±0.62	3.96±0.54	3.68±0.67**#

**5 Conclusions**

The development of students' non-intellectual factors can be effectively promoted by the human visual perception mechanism. Through the development of non-intellectual factors, students' academic performance is improved by the mechanism of human brain perception.

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### **Reference**

- Abbasikesbi R, Memarzadehtehran H, Deen MJ (2017) Technique to estimate human reaction time based on visual perception. *Healthcare Technology Letters* 4(2):73-77.
- Akben SB (2016) Importance of the shape and orientation of the spine and pelvis for the vertebral column pathologies diagnosis with using machine learning methods. *Biomedical Research-India* 27(SI):S337-S342.
- Jang JS, Choi SH, Jung GS, et al. (2017) Focused augmented mirror based on human visual perception. *Visual Computer International. Journal of Computer Graphics* 2017, 33(5):625-636.
- Kim YW, Ahn YJ, Sim D (2017) Human visual perception-based quantization for efficiency HEVC encoder. *Journal of Broadcast Engineering* 22(1):28-41.
- Meijer DKF, Geesink HJH (2017) Consciousness in the universe is scale invariant and implies an event horizon of the human brain. *Neuroquantology* 15(3):41-79.
- Song C, Sandberg K, Møller AL, et al. (2017) Human occipital and parietal GABA selectively influence visual perception of orientation and size. *Journal of Neuroscience* 37(37):8929-8937.
- Yan Y, Zheng X, Wang S, et al. (2019) A collaborative environmental education pattern of deepening the integration of production and education based on application-oriented undergraduate teaching: a case study in civil engineering (major of beibu gulf university). *Ekoloji* 28(UNSP e107529107):4711-4718.
- Zhang G (2017) Construction of the college education quality management system based on big data and its evaluation. *Agro Food Industry Hi Tech* 28(1):3124-3127.

