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RESEARCH ARTICLE

STUDY ON INFLUENCE OF COGNITIVE CHARACTERISTICS OF STUDENTS IN DIFFERENT GENDER TENDENCY ON TEACHING STRATEGIES UNDER NETWORK ENVIRONMENTS

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ARTICLE DETAILS

ABSTRACT

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ABSTRACT

With network technological development, students have more opportunities to access the Internet and they spend more time learning online. It has become a new teaching mode to offer diversified teaching considering cognitive characteristics of students with different gender tendency. It has also become an emerging research topic to establish a proper mode as well as an essential and hot subject in teaching field. The author reviews massive related literatures and has an overall understanding towards current achievements. This essay studies differences embodied in cognitive characteristics under different gender tendency; analyzes characteristics from aspects of consciousness, memory, attention, thinking and imagination; conducts an examination towards gender tendency of students studying online; designs a diversified teaching mode aimed at different groups through picture processing; conducts a control experiment towards the mode; analyzes results; as well as proves that the diversified teaching mode is effective, feasible and advanced. Results show that students can digest knowledge better under the mode and the mode can also help to improve students' learning abilities.

KEYWORDS

Gender tendency, cognitive characteristic, diversified teaching, teaching mode.

1. INTRODUCTION

Personalized thinking leads to different learning habits and methods; therefore, traditional teaching mode cannot take advantage of students' learning initiatives as well as let students show their personalities so as to achieve personalized development. Online learning breaks down such barrier. It allows students to try and experience their individualized learning methods. In the meantime, "diversified teaching" has been paid more attention to. The purpose of diversified teaching is to help student cultivate themselves to the largest degree. It is set to provide high-quality education for students so as to offer students equal educational opportunities in real terms instead of simply asking for test grades and enrolment rates.

Some researchers have already studies those issues and made great achievements. An American psychologist Bem firstly raised up a gender role concept entitled "androgyny" which was a breakthrough for traditional one-dimensional gender role definition, that is, the definition of "male and female". Bem formulated the first scale which could be used to measure androgyny tendency and named it Bem Sex-Role Inventory [1]. "Cognitive style", a sustainable mental disposition in cognitive activities, refers to preferences in information processing. It can be seen as personalized and habitual way to deal with information [2]. Social culture has different requirements towards different gender groups. During the process of socialization, people will behave differently following their biological genders.

Such distinguished behaviors can be seen as "gender roles" or "mental genders" [3]. Online courses are designed following the Learning Theory of Humanism proposed by Rogers. The theory focuses on students and

emphasizes students' independent learning ability. It has four parts and all of them stress individual participation. It highlights autonomic learning and learning results are evaluated by students. The theory tries to bring in a comfortable and attractive learning environment [4]. With the development of anthropology and physiological, a systematic gender differential psychology has been built. The psychology raises people's awareness of gender differences and makes those differences be accepted by more people. Maccoby and Jacklin's study on gender differential psychology plays an important role during this process [5].

Chapter 2 analyzes differences of gender tendency of cognitive characteristics from aspects of consciousness, memory, attention, thinking and imagination, conducts a survey towards students studying online and designs different teaching strategies facing different gender tendency groups. Chapter 3 conducts a test to testify the feasibility and effectiveness of teaching strategies in a quantized way, which illustrates the importance and advantage of this study. Chapter 4 is a conclusion for the whole essay. In this chapter, the author points out research directions for further studies.

2. MATERIALS AND METHODS

The teaching mode based on network environments, also "online teaching", refers to a distance teaching mode using computer equipments and network technologies to cultivate students' abilities of collecting, processing, analyzing, innovating and applying information and communication. It is widely used in modern society [6]. Figure 1 represents one online teaching mode.



Figure 1: Network teaching mode

2.1 The necessity of embodying differences of gender tendency of cognitive characteristics and relative studies based on measures

In online teaching, students spend most of their studying time on and learn most contents by independent study. Therefore, learning ability is the decisive and direct factor of learning results. Learning ability is also called

cognitive ability. It refers to ability of human brain to process, store and extract information. It can be seen as an ability to deal with information such as the composition of an object, the feature of an object, relationships between objects, the power of development, the direction of development, as well as basic laws. Generally, it concludes abilities of consciousness, memory, attention, thinking and imagination [7]. It is the most difficult part in learning process to train teachers to adjust their teaching purposes and strategies according to each student's features and needs, which is also a responsibility of a teacher.

Over a long period of time, psychologists hope to design a perfect scale to measure mental differences. They consider that in common conditions, a mental preference for female or male can be measured. However, as research goes on, they find that mental activities do not strictly follow "female" and "male" characteristics [8].

2.2 Specific reflects of gender tendency differences of cognitive characteristics

It is hard to meet a large number of students' needs by simply taking one teaching strategy both in traditional teaching mode and online teaching mode. In order to modify this condition, diversified teaching should be conducted to meet students' features and needs to the largest degree [9]. In order to achieve diversified teaching which combines gender tendency with response characteristics of cognitive abilities, influences of gender tendency on students should be firstly analyzed, which is shown in Table 1.

Table 1: The influence of gender tendency for students

	Masculine tendency	Feminization tendency
perception	Big activity, energetic, willing to study	Be good at communication, abundant emotions, less sensitive to novelty
memory	Strong understanding and abstract memory	With a strong image and mechanical memory
Pay attention to	Orientation in content, more focus on specific objects of stability is better, a longer duration	Directed to people more, better in stability of people's attention, a longer duration
thinking	More focus on logical thinking, creative thinking	More focus on the image thinking, sensibility thinking
imagine	The advantage of logical thinking lead to logical thought	The advantage of image thinking lead to rich vivid imagination

From Table 1, it can be seen that male tendency students have storing visual ability. They can respond rapidly to visual stimulations. Male tendency students focus on materials' ideological contents. They prefer free retelling with their own languages; exploring objects; conducting analysis, comparison, abstraction and summary; machinery invention; as well as solving problems creatively. They are good at making conclusion through analysis and analyzing specific conditions [10]. Female tendency students have shaper hearing. They prefer memorizing details and pay less attention to understanding and processing information. They imitate through figurative memory, like studying human relationships, pay attention to regulations and rules, as well as perform well in memorizing words and recognizing pictures. They prefer direct impression. They are easy to be hinted or controlled, prefer summarizing mechanisms and depend more on specific conditions.

Daily activities can reflect cognitive ability. Daily activities are due to cognitive activities in human brain. Every activity has its specific meaning and requirement. They are connected with one another so as to form an ability system with certain structures [11].

2.3 Gender tendency survey and examination of online teaching students

Gender character can be divided into four catalogues: androgyny, female-like, male-like and non-differentiation. Androgyny refers to a condition that an individual has both male features and female features. Non-differentiation is defined as a condition that the differentiation of gender roles is not distinct and an individual share few female and male features [12]. Domestic professionals design a series of gender role measurement scales with different characteristics and emphasis. However, those scales have higher requirements of accuracy and are hard to handle when they are applied to online teaching; therefore, comprehensive factors should be taken into consideration. Researchers should conduct surveys and tests which are closer to students' life to classify students into students with "female tendency" and students with "male tendency".

The premise of diversified teaching is to testify students' gender tendency and classify results. The whole process is called "pre-test" [13]. Before online teaching starts, students are required to fill out a form for gender tendency testing and a system will classify their gender tendency later on. In order to avoid non-accuracy of only on test, students will be tested at different learning stages so as to continuously adjust their learning conditions and achieve best learning effects. This method can meet both students' needs and their features [14]. It can also make teaching targeted as well as save teachers' time and energy. The whole method is humanized. Contents of the test are illustrated in Table 2.

Table 2: Test items

Survey methods	Based on survey	Life common sense class	Is closely related to People's Daily life in the form of open questions
		Understand the class rules	The depth of the student to the basic knowledge
		Numerical reasoning class	Form narrative or actual problem analysis of the causes the student to solve the problems of the digital
		Memory span class	Given a certain number of phrases for memory
		Text define classes	According to the computer list a set of words by learners according to their experience and understand the defined
	The practice test	Reduction class picture	Through careful observation, summarize regularity and trend, using their own thinking and imagination to picture place
		Physical splicing class	Will provide the scattered small system within the prescribed period of time according to the given artwork to splice
		Alternating number form class	Within the prescribed period of time according to the memory of numbered symbols

Test questions in Table 2 appear randomly to testify a student's gender tendency. This test only targets a student's learning habits and does not involve in his moral activities, intelligence and other qualities. Therefore, a student can answer questions in a comfortable way. Questions are designed to testify a student's characteristics and thinking habits; therefore, there is no right or wrong.

2.4 A design of diversified teaching strategies fit for cognitive characteristics of different gender tendency

Learners with different gender tendency are equipped with distinguished cognitive characteristics. Students learn through recognizing knowledge of a subject and then understanding and handling the knowledge. Therefore, diversified teaching refers to a method of designing different teaching strategies for students with distinguished cognitive characteristics so as to halve the work. Diversified teaching focuses on both generality of students and personality of each student and combining those two aspects together so as to match teaching with student learning and developing to the largest degree [15].

This essay takes the course Photoshop Application as an example to illustrate gender tendency in diversified teaching. In order to make description of design more clear and workable, the author will conduct detailed explanations on consciousness which is one feature of cognitive differences.

The arrangements of learning contents reflect a fact that the difference of network course design indicates consciousness will be influenced by gender tendency. Male tendency learners extract points from both direct and indirect interpretations, while female tendency learners follow operating tips and guidance. They are more sensitive to sound and prefer memorizing knowledge in details to form their own learning systems for further understanding and handling of the knowledge. Therefore, the design of diversified teaching strategy is according to different consciousness features of learners with different gender tendency. Figure 2 is a concept map showing how conscious differences are reflected in this example.

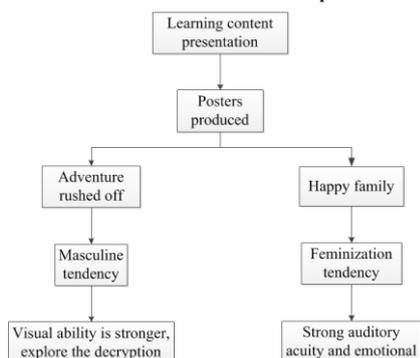


Figure 2: Perceptual differences in Photoshop instance design concept map

During learning Photoshop, learners with different gender tendency perform in different ways. Male tendency learners prefer to exploring knowledge by themselves by showing them pictures and describing detailed steps. Female tendency students prefer following voice prompts and imitating to learn knowledge.

3. RESULTS

In order to testify influences of cognitive characteristic differences caused by gender tendency on teaching effects, the author conducts a gender tendency test for students who have never learnt Photoshop before in the Photoshop course. 50 students of male tendency and 50 of female tendency are selected randomly. Those students are divided into two groups and each group contains 25 students with male tendency and 25 students with female tendency. Two groups of students are taught under different teaching strategies. The main difference is the way to organize teaching contents. The first group takes teaching strategies which are fit for male tendency learners such as heuristic teaching. The second group takes teaching strategies which target female tendency learners. In class, teachers will explain teaching methods in details and teaching students hand by hand and step by step.

After course, the author testifies their learning effects by giving them a picture to process. Students are required to work independently. The author counts time they use, evaluates pictures processed and ranks those pictures into three levels A, B and C. Result are as follows:

Table 3: The test completed time statistics

	NO.1 Group		NO.2 Group	
	Boy (T1)	Girl (T2)	Boy (T1)	Girl (T2)
Average Completion Time	23.6 min	27.4 min	25.3 min	20.5 min
T1-T2	-3.8 min		4.8	

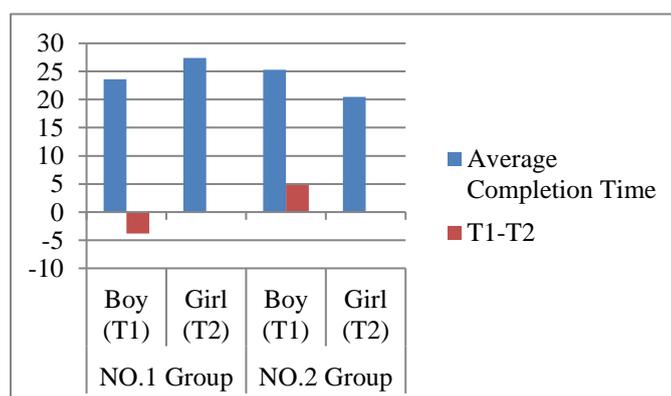
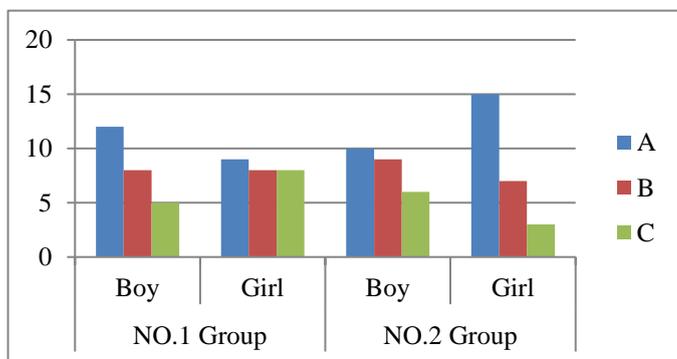


Figure 3: The test completed time statistics

Table 4: The image quality evaluation statistics

Image quality evaluation	NO.1 Group		NO.2 Group	
	Boy	Girl	Boy	Girl
A	12	9	10	15
B	8	8	9	7
C	5	8	6	3

**Figure 4:** The image quality evaluation statistics

According to results, it can be seen that in the first group where teaching strategies fit for male tendency learners are applied, male tendency students perform better than female tendency students. They process pictures faster and pictures processed are in higher qualities. In group two, the result is opposite. Therefore, teaching strategies suitable for different gender tendency can improve teaching effects. Degree of knowledge acquisition of learners taught by strategies fit for their gender tendency becomes higher. All those prove that diversified teaching strategy is effective and advanced.

4. CONCLUSIONS

With the development of computer and network technology, online teaching has become more and more popular. It has become a research topic to design teaching modes targeting students with different gender tendency, which is called diversified teaching. The author studies current related studies as well as specific reflections of cognitive characteristic differences of different gender tendency. This essay conducts analysis from different aspects as well as surveys, examinations, and questionnaires of online students' gender tendency. The author designs diversified teaching strategies which are fit for students with different gender tendency in a Photoshop course. Through comparing influences of different teaching strategies towards student learning effects, the essay proves that diversified teaching is effective and advanced. Such teaching strategy can not only improve students' grades but also motivate their interests as well as improve their abilities.

In conclusion, diversified teaching mode plays a virtual role in formulating curriculum and teaching strategies. The representation of teaching contents shows consciousness difference. Strengthening memory of specific concept is related to memory difference. Attention difference

refers to a condition that students with different gender tendency require different learning environments. Thinking difference relates to how to apply a technique to deal with different materials. Imagination difference can cultivate students with different gender tendency to have diversified improvements. This essay makes certain achievements; however, it also has shortcomings. Further studies should be conducted on aspects such as how gender tendency characteristics are influenced by age.

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