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# **An Analysis of the Learner as the Main Body of Advanced Mathematics Immersive Teaching Model Based on Situational Experience**

**Xiaorong Zhu<sup>1\*</sup>, Yilin Bei<sup>2</sup> and Liang Fang<sup>3</sup>**

<sup>1,2,3</sup>College of Information Science and Technology, Taishan University, Taian, China.

\*Corresponding author email id: [smile\\_nine@126.com](mailto:smile_nine@126.com)

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**Abstract** – With the development of network technology, the learner's learning lifestyle and cognitive model compared with the previous learners have fundamental changes. However, many college teachers tend to ignore the emotional and cognitive characteristics of learners' growth and are unwilling to change their teaching logic and methods due to the influence of thinking inertia and teaching reform inertia, resulting in poor teaching effects. Based on the analysis of features of mathematics teaching Learners learning features and teachers teaching reform inertia and so on, this article focuses on a detailed analysis based on scene experience immersion teaching methods as well as its application in advanced mathematics teaching, improve the methods of advanced mathematics teaching to adapt to the learners' needs and promote the learners' interest in learning, to promote the basic science teaching and research.

**Keywords** – Situational Experience, Immersion, Teaching Reform.

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## **I. INTRODUCTION**

In essence, the teaching process of advanced mathematics is a process of thinking change, which requires the interaction of both teachers and learners. As the original digital residents, college students are more active and curious in the learning process, and prefer interactive learning based on scenarios. Traditional teaching methods such as procedure teaching and mastery teaching based on behaviorism and cognitivism emphasize too much on the role of teachers, which makes it difficult to gain learners' sympathy, and also reduces learners' interest in advanced mathematics to some extent. Many college teachers have adapted to this lecturing teaching method in teaching practice, and are unwilling to take the initiative to reform, so the teaching reform is inert. The solidification of the thinking of the teaching staff makes the classroom atmosphere of advanced mathematics teaching boring, which makes the learners being easy to have bored psychology. The phenomenon of bowing head occurs frequently in class, and the teaching effect of advanced mathematics is not played out.

This paper mainly introduces that the author according to his own teaching practice of advanced mathematics, combined with the learning characteristics of learners, using situational experience teaching method and immersion teaching method for reference, cracks the problem of inertia in teacher's teaching reform, explores the teaching reform of advanced mathematics, and makes learners become the main body of teaching activities. Through the creation of case scenarios, learners can fully experience the mystery of mathematics, and can be immersed in the case environment, and stimulate the learning enthusiasm of learners, so as to achieve the purpose of advanced mathematics teaching.

## **II. INTRODUCTION AND THEORETICAL BASIS OF SITUATIONAL EXPERIENTIAL TEACHING AND IMMERSIVE LEARNING**

Immersive learning of situational experience mainly includes two aspects: one is to guide learners to construct

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teaching case of teaching scenario design under the guidance of teachers; the other is to conduct immersive learning with learners as the main body to achieve ideal teaching effects.

#### *A. The Connotation and Theoretical Basis of Situational Experiential Learning*

Situational experience teaching usually refers to a teaching method in which teachers purposefully introduce or create specific scenes, integrate learning with the situation, and optimize curriculum teaching through the evolution of the situation. Its main intention is to realize the effective transfer of knowledge and develop students' creative imagination<sup>[1]</sup>. The essence of situational experiential teaching lies in arousing students' emotion to stimulate learning involvement by optimizing learning context<sup>[1]</sup>. Its specific requirements are that teachers should create problem situations for learners based on their learning characteristics and teaching objectives, geared to the needs of learners to create problem situation, make learners positive thinking and form their own cognitive law, improve the learners' thinking in images ability, and find their own innovation potential<sup>[2]</sup>, so as to improve teaching effect and better promote the implementation of teaching.

The theoretical basis of situational experiential teaching is mainly based on constructivism learning theory, experiential teaching method and discovery teaching method. Constructivism believes that the important thing in learning is not to learn the knowledge left by human beings, but to construct new knowledge by ourselves, which emphasizes the initiative of learners and the cultivation of learning ability<sup>[3]</sup>. Constructivism emphasizes the initiative of learners, advocates situational learning, and emphasizes the concretization of knowledge content into certain examples by creating different situations, so as to avoiding the general application of knowledge abstract. Experiential teaching method creates an interactive communication form, emphasizing the bilateral emotional experience of teachers and students. Teachers should attach importance to learners' emotions, and must create a respectful, tolerant and safe classroom environment that encourages self-esteem and autonomy and provides positive incentives<sup>[4]</sup>.

In the process of learning, the division of labor between teachers and learners is clear. Teachers are helpers and promoters, and learners' dominant position in learning is emphasized. Teachers are mainly responsible for creating situations or cases by integrating learners' personal information and knowledge structure system and content in teaching, guiding and organizing learners to conduct situational experience learning, so that learners can form a multi-angle understanding of learning content and realize all-round learning.

#### *B. The Connotation and Theoretical Basis of Immersive Learning*

Flow theory was first proposed by Csikszentmihalyi in 1975. It points out that when people are engaged in activities, they will be fully immersed in the situation and filter out all irrelevant factors to enter a state of immersion<sup>[5]</sup>.

Immersive learning mainly refers to providing learners with a virtual and realistic learning environment through virtual situations so that learners can stimulate their interest in learning through high participation and interaction, so as to improve learning quality. It mainly comes from the practice of language teaching, and its core and essence is to stimulate learners' interest and actively engage in learning by means of scene repetition and scene simulation, so as to achieve the goal of learning.

From the above connotation and theoretical basis of situational experiential teaching method and immersive le-

-arning, we can see that the core elements of both mainly include the following contents: teacher guidance, learner subjectivity, situation creation, emotional experience and high participation of teachers and learners.

### III. CASE ANALYSIS OF SITUATIONAL EXPERIENTIAL TEACHING IN ADVANCED MATHEMATICS

Advanced mathematics needs to mobilize people's logical thinking, spatial thinking and abstract thinking, which makes learners feel that mathematics content is boring at the beginning. In practice teaching, if we can combine the learners' emotions and emotions, create a scientific learning environment and practical application cases, it will make mathematics teaching more realistic and make more learners willing to take the initiative to engage in mathematics learning and research. The following two cases are about the application of situational experience teaching and immersion learning in advanced mathematics teaching.

#### A. *Create a Situation, Experience Immersive, Scientifically Evaluate, and Solve the Contradictory Phenomenon in Advanced Mathematics Teaching Correctly*

Advanced mathematics contains many knowledge systems of unity of opposites, which is contradiction in philosophy. Positive and negative, differential and integral, infinite and finite in mathematics are concrete manifestations of contradiction

Take the idea of infinity in advanced mathematics. We'll talk about the approach of the independent variable when we look at the limit definition of a function. We'll talk about the approach of the independent variable when we look at the limit definition of a function. At this time, the learner has just learned the definition of the limit of a sequence. For a sequence, the approach of its independent variable  $n$  is tending to  $\infty$ . Therefore, many people will take it for granted that the approach of the independent variable in the limit of a function is also tending to . Then, there will be contradictions. At this point, teachers can guide learners to find out the differences in the values of independent variables in the two limit definitions so that learners can discuss in groups and explore the causes of the contradictions, and finally find solutions to the contradictions by actively analyzing the problems themselves. This setting enables learners to engage in learning activities with emotion based on conflict resolution, and their thoughts are more active, rather than simply accepting the teacher's instruction. As a result, each group of students can be immersed in this discussion learning, and soon get a variety of answers.

#### B. *Create a Situation Based on Emotional Cognition to Solve Difficult Problems in Advanced Mathematics*

Emotional cognition is very important in mathematics teaching. The reason why many learners have the partial impression that mathematics learning is boring is because they ignore the emotional cognition of mathematics in mathematics learning. Immersion learning plays a significant role in advanced mathematics learning, and the key lies in the good emotional communication between teachers and learners. Teachers, as designers and guiders of situational teaching, can better immerse learners in learning by creating scenarios with emotion as the breakthrough point. Through the emotional interaction with learners and the creation of some realistic interpersonal relationship based on the situation to simplify complex problems, abstract problems concrete, so as to let learners really immersed in the teaching situation, which can play the role of experiential learning.

When explaining the limit definition of functions of several variables, we will encounter a difficult condition in

the definition. Here, why is  $p \rightarrow p_0$  required to be true? Usually a lot of teachers will explain that dot is not equal to dot, so why is it not equal? In fact, because of the requirements of limit definition, its premise is that the multivariate function has a definition in a decentralized neighborhood of the point, that is to say, whether the function has a definition at  $p_0$  does not affect whether its limit definition is valid. In this way,  $p$  and  $p_0$  are infinitely close but cannot be equal. When talking about this knowledge point, because it is too abstract, many learners cannot understand it well. We will guide learners to imagine and these two points as two classmates. They are very close friends (we will invite the two students who have a good relationship with each other to participate in the scene). They can have infinite common interests, but they can not become the same person, but can only be infinitely close. In the classroom teaching, many students deepen their cognition of a seemingly boring mathematical definition due to the closeness of emotional relationship among students, and the seemingly cold and hard mathematical formula definition will become warm immediately. The case analysis created by the teacher from the humanistic perspective makes learners feel like spring breeze.

#### IV. ANALYSIS OF CONSTRUCTING IMMERSIVE TEACHING MODE OF ADVANCED MATHEMATICS BASED ON SITUATIONAL EXPERIENCE

##### A. *The Situation Creation Should be Suitable for the Needs of the Educational Objects*

Teaching should make learners adapt to social changes, know how to learn, and help learners realize their potential and value. Teaching is to let learners become the main body of learning, from the psychological characteristics of young people curiousness, inquisitiveness, activeness, to guide them to think actively, explore the root of the problem, in the process of solving the problem to form their own cognitive conclusions. It can be seen that learners are the center of all teaching activities, and the role of teachers is mainly to guide learners to think about problems and solve problems independently so as to help learners tap their own potential and realize their own value.

##### B. *Situational Experience Should be Scientifically Planned and Implemented Step by Step*

Situational experiential teaching mainly includes five aspects: situation creation, integrating into the situation, thinking of problem solving scheme, positive incentive and process correction.

In the first example, the teacher points out the creation of a situation to solve the contradiction according to the contradiction between the two definitions, and let learners actively discuss the way to solve the contradiction into the situation, so as to find a solution to the problem through discussion. The teacher makes a systematic analysis of the scheme, gives positive incentive evaluation to each group of participants and encourages them to participate actively, which can ensure that every learner can gain something from this learning.

##### C. *Emotional, We Should Pay Attention to Learners' Emotion and Pay Attention to the Importance of Motivation*

In the context of situational experiential teaching, teachers should change the previous way of question-and-answer communication, and timely communicate with learners, so that learners can express their opinions, and their suggestions can be displayed in the created situation, which will make them feel that they are valued, and create a harmonious learning atmosphere.

##### D. *Attention Should Be Paid to the Application of Immersion Learning in Teaching*

Immersion learning has changed the one-way knowledge transmission relationship between teachers and learners. Through situation creation and case teaching, learners and teachers achieve a benign interaction, inject vitality and vitality into the classroom, which let learners in the preset situation, get rid of external interference, mobilize enthusiasm, actively think and participate, so that individuals become the subject of learning. Through self-experience of immersive learning, learners can integrate and sort out relevant theoretical knowledge of the knowledge they have learned, construct their own knowledge context, and improve their cognitive level and learning ability.

#### **IV. CONCLUSION**

In 1996, the four pillars of education were proposed by UNESCO, among which the first pillar is to learn cognition, that is, to cultivate the ability of learning, which is more for mastering the means of cognition rather than obtaining classified and systematic knowledge<sup>[6]</sup>. Learning is a kind of ability, through which learners learn to recognize, master the rules of cognition, and achieve independent learning.

Situational experience teaching requires the teacher to be the leader of teaching and be responsible for guiding learners to engage in immersive situational experience learning. This requires teachers to constantly improve teaching methods, optimize the teaching process, establish a good emotional relationship with learners, design mathematical case scenarios for learners to immerse themselves in learning, and make learners become the subject of learning. Situational experience teaching requires the teacher to be the leader of teaching and be responsible for guiding learners to engage in immersive situational experience learning. This requires teachers to constantly improve teaching methods, optimize the teaching process, establish a good emotional relationship with learners, and design mathematical case scenarios for learners' immersion learning. Under the guidance and positive encouragement of teachers, learners strengthen learning cooperation by establishing learning community model, promote inquiry-based learning mode, constantly explore the entity cases related to advanced mathematics, cultivate the ability of active thinking and problem solving, and jointly promote the reform and development of advanced mathematics teaching from both teaching and learning.

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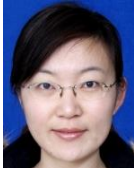
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### **AUTHOR’S PROFILE**



**First Author**

**Zhu Xiaorong**, Female (1979), Master, Associate professor, Taishan University, Research Interest : Mathematics Education, Tai 'an, 271000, Shandong, China.

**Second Author**

**Yilin Bei**, College of Information Science and Technology, Taishan University, Taian, China.

**Third Author**

**Liang Fang**, College of Information Science and Technology, Taishan University, Taian, China.