



**THE INFLUENCING FACTORS OF THE INSTRUCTIONAL
MODEL OF THE PROFESSIONAL ASSOCIATION OF DIVING
INSTRUCTORS**

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**AN INDEPENDENT STUDY SUBMITTED IN PARTIAL FULFILLMENT OF
THE REQUIREMENTS FOR THE DEGREE OF MASTER OF BUSINESS
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This Independent Study has been Approved as a Partial Fulfillment of the
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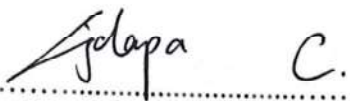
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ABSTRACT

As diving equipment and techniques are constantly updated, traditional instructional models may not cover the latest technology and safety measures, and course content and teaching methods need to be updated to reflect these changes. The Professional Association of Diving Instructors(PADI) courses are implemented globally, and differences in culture, language, and diverse environments of the participants in different regions need to be considered and adapted in the instructional model.

The objective of this study was to explore the effect of advanced teaching equipment, teaching safety, and individualized needs on the instructional model of the Professional Association of Diving Instructors.

This study adopted the quantitative research method. 400 questionnaires were distributed during the survey period, and 322 valid questionnaires were recovered, with a validity rate of 80.5%. This study found that advanced teaching equipment, teaching safety, and individualized needs have a significant positive effect on the instructional model of the Professional Association of Diving Instructors. For recommendations, PADI should focus on the following aspects: 1) Equipping instructors with advanced teaching equipment; 2) Adopting safety measures; 3) Personalizing teaching methods.

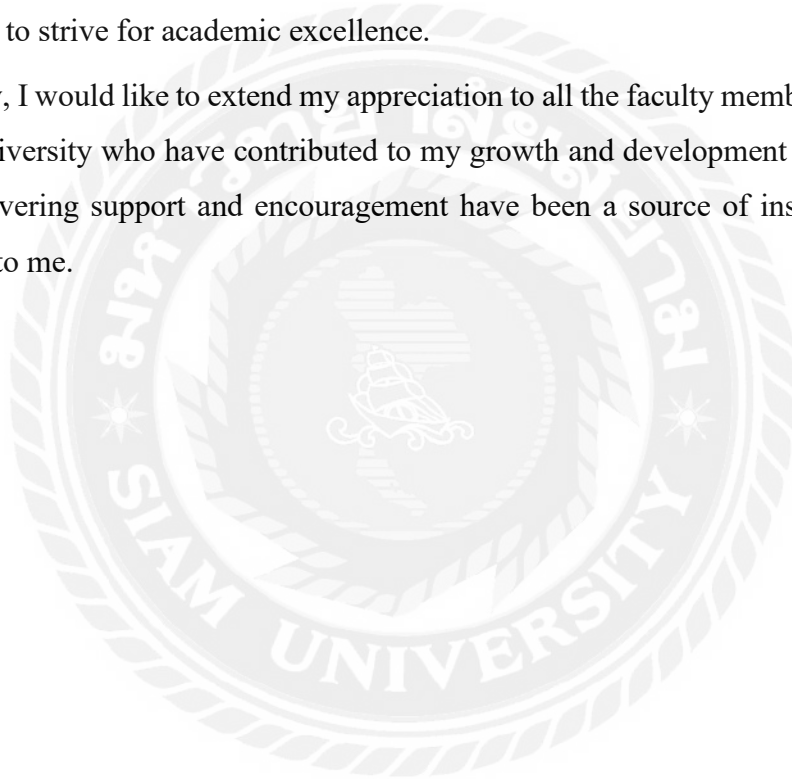
Keywords: Professional Association of Diving Instructors, instructional model, advanced teaching equipment, teaching safety, individualized needs

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DECLARATION

I, Zeng Ximing, hereby certify that the work embodied in this independent study entitled “The Influencing Factors of the Instructional Model of the Professional Association of Diving Instructors” is result of original research and has not been submitted for a higher degree to any other university or institution.

(Zeng Ximing)
July, 8 2024



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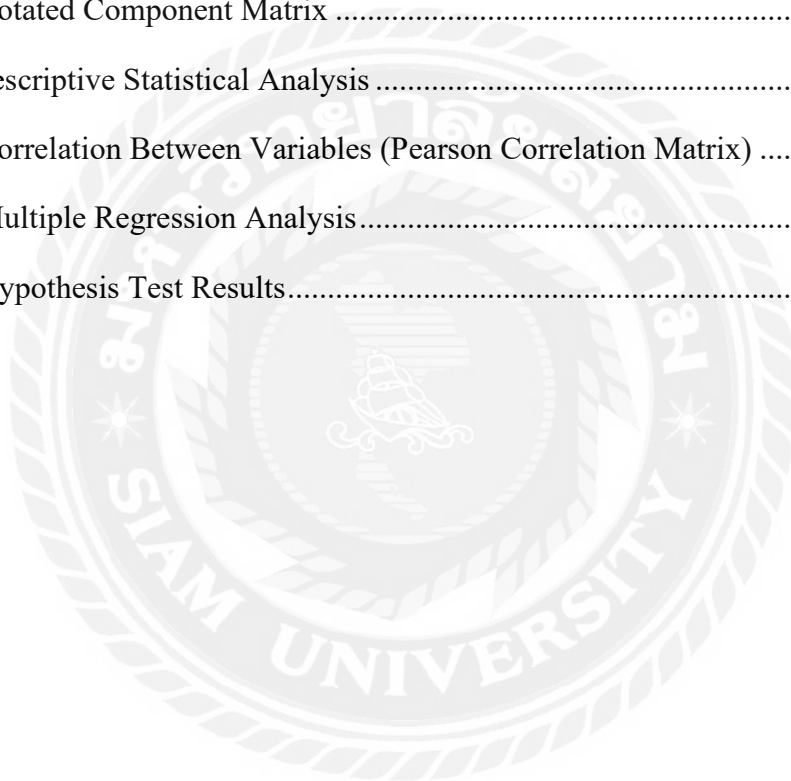
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Chapter 1 Introduction

1.1 Background of the Study

The Professional Association of Diving Instructors (PADI) is one of the largest dive training organizations in the world. Founded in 1966, PADI offers a wide range of diving courses, from beginner Open Water Diver courses to advanced professional-level courses such as Instructor, and is renowned for its high standards of safety and quality of instruction (Lippmann et al., 2018). PADI courses are structured and systematic, with a modular approach that allows students to develop their diving skills through theory, calm water training (e.g., swimming pools), and open water training (e.g., oceans and lakes). Students learn to dive quickly, and the PADI program is very informative. The PADI courses are informative and allow students to progressively master their diving skills and apply their knowledge in a diving environment. Upon completion of all levels, students receive the appropriate international certification, which allows them to participate in diving activities worldwide (Buzzacott et al., 2021). PADI's course delivery model is widely used in the diving industry, as it is known for its high standards of safety and quality of instruction and its structured, modular approach to enabling students to master their diving skills progressively. With PADI's international certification, students can participate in diving activities worldwide and have more career opportunities. Whether a beginner or a diver specializing, can find the right course at PADI (Serlina & Leonard, 2020).

As diving equipment and techniques are constantly updated, diving instruction needs to evolve to ensure that divers are up-to-date with the latest techniques and safety measures. Traditional instructional models cannot cover these changes promptly, so course content and teaching methods need to be updated and improved. Despite the emphasis on safety in PADI courses, diving accidents continue to occur, suggesting that further improvements to the instructional model and content are needed to increase divers' safety awareness and emergency response skills (Serlina & Leonard, 2020). The teaching content can pay more attention to the teaching of diving safety knowledge, such as the prevention and treatment of diving accidents, the maintenance and inspection of diving equipment, and so on. Meanwhile, by simulating real diving scenarios and emergencies, trainees can exercise their ability to cope with dangerous situations in a controlled environment to improve their self-rescue and mutual-rescue abilities. Evaluation of the effectiveness of the existing instructional model is also necessary. Although the PADI course has certain requirements for theoretical learning and practical skills, some trainees may still lack sufficient experience and confidence at the end of the short course (Sepasgozar, 2020). Therefore, consideration may be given to adding practical training and field placements to the course to enable participants to experience the real diving environment firsthand and to enhance skill and confidence-building through practice. Standardized courses cannot fully meet the needs of all participants, especially those with different backgrounds, abilities, and learning styles. Therefore, introducing more personalized and flexible teaching methods is necessary.

For example, different diving course options can be provided to meet the needs of learners according to their backgrounds and interests. At the same time, diversified teaching methods, such as group discussions, practical exercises, and individual instruction, can better suit the learning styles and needs of the trainees and improve their learning effectiveness and outcomes. By enhancing divers' safety awareness and emergency response capabilities, strengthening practical training and field exercises, and introducing personalized and flexible teaching methods, the skill level and learning outcomes of divers can be further improved to meet the changes and challenges of the diving industry (Lundell et al., 2019).

Diving is a sport that requires a high level of psychological quality, so psychological problems such as fear and anxiety of the students need to be better dealt with in the teaching to ensure their mental health and stability during the diving process. At the same time, with the increasing awareness of marine environmental protection, the course content needs to incorporate protection education to cultivate students' responsibility (Sepasgozar, 2020). The teaching of PADI courses and the advanced teaching equipment need to keep pace with the development of the industry to ensure that students can master the latest diving technology and safety measures. To fully utilize the potential and improve students' learning effectiveness, the teaching methods should be more personalized and tailored to the student's needs. Teaching methods should be more personalized, and teaching content should be designed according to students' characteristics and needs to promote their learning interests and participation (Buzzacott et al., 2021). For the problems in teaching safety, students do not have enough opportunities to practice and simulate scenarios to cope with diving accidents and thus do not fully understand and master the correct behavior in emergencies. PADI courses are implemented globally, and there are differences in culture, language, and environments among students in different regions that need to be adapted to the instructional model. This study aimed to provide a theoretical basis and practical guidance for the instructional model of PADI courses. By improving the state-of-the-art teaching equipment, personalizing the teaching methodology, and strengthening the teaching safety awareness, the teaching quality of PADI can be improved. The student's learning experience and diving safety can be enhanced. This will help train divers with more comprehensive diving skills and safety awareness (Buzzacott et al., 2021).

1.2 Questions of the Study

Despite its worldwide reputation, the PADI diving instructional model still faces some problems in practice. With the rapid development of diving technology, PADI courses in some regions and training centers may not be able to update the equipment and teaching content in time, resulting in students being unable to access the latest diving technology and methods. This not only limits students' learning experience but may also affect the safety and efficiency of diving. Some instructors lack sufficient experience or do not adequately emphasize emergency handling and risk management

education. In addition, safety standards and operating procedures are updated at different rates in different regions, resulting in trainees failing to grasp the latest safety knowledge and emergency handling methods. Different trainees have different backgrounds, learning styles, and ability levels. Some trainees may need more time to acquire skills or adapt to specific environmental conditions, which a standardized teaching schedule may not adequately support. In addition, cultural and linguistic differences may affect participants' understanding and application of course content, especially in an international teaching environment. Therefore, there is a need to improve the overall teaching quality of PADI diving courses, enhance the safety awareness and skill level of participants, and cultivate more diving enthusiasts who love and respect the ocean, thereby promoting the healthy development of the sport and the advancement of marine conservation.

(1) Does the advanced teaching equipment affect the instructional model of the Professional Association of Diving Instructors?

(2) Does the teaching safety affect the instructional model of the Professional Association of Diving Instructors?

(3) Do the individualized needs affect the instructional model of the Professional Association of Diving Instructors?

1.3 Objectives of the Study

The purpose is to explore the impact of state-of-the-art instructional equipment, instructional safety, and individualized needs on the Professional Association of Diving Instructors (PADI) instructional model. State-of-the-art equipment can change the methodology and effectiveness of instruction and can enhance the learning experience and skills. The impact of safety on the PADI instructional model, including the emphasis on safety awareness and emergency response skills, can reduce the occurrence of diving accidents. The personalized needs of the PADI instructional model, including teaching methods and content according to individual differences and learning needs, improve the learning effect and satisfaction. The comprehensive study of these factors aims to provide a theoretical basis and practical guidance for the PADI instructional model, which will improve the quality, the learning experience, and the safety of diving.

(1) To explore the effect of the advanced teaching equipment on the instructional model of the Professional Association of Diving Instructors.

(2) To explore the effect of the teaching safety on the instructional model of the Professional Association of Diving Instructors.

(3) To explore the effect of the individualized needs on the instructional model of the Professional Association of Diving Instructors.

1.4 Scope of the Study

The scope of this study is typically multi-faceted to provide a comprehensive understanding of the factors that influence the Professional Association of Diving Instructors (PADI) instructional model. The subjects of the study were primarily students involved in PADI instruction. Study participants needed to have participated in a PADI dive course. Those participants who had not yet participated in instruction were excluded. Age, gender, income, and education of the respondents were included in the research investigation process. Multiple factors influencing the model of instruction needed to be included. The questionnaire survey included factors including advanced teaching equipment, teaching safety, and individualized needs of trainees. It can provide a more comprehensive understanding of the influencing factors of the instructional model of the Professional Diving Instructors Association and provide valuable information for improving the instructional model, teaching quality, and student satisfaction.

1.5 Significance of the Study

By updating and introducing advanced teaching equipment promptly, trainees can experience the latest diving technology and improve their learning effectiveness and diving safety. Strengthening education on emergency handling and risk management, as well as regularly updating safety standards and operating procedures, can further enhance the safety of diving instruction, so that trainees can calmly and correctly deal with emergencies when facing them, and reduce the occurrence of diving accidents. In addition, flexible and personalized teaching methods to meet the needs of different trainees can enhance the learning effect, and trainees' confidence and skill levels can be strengthened. Considering cultural and linguistic differences, the provision of multilingual course materials and instructor training in cross-cultural communication skills helps to create a learning environment of inclusion and understanding so that learners from all over the globe can effectively understand and apply what they have learned (Baron-Thiene & Alfermann, 2015; DiFiori et al., 2014). By keeping up-to-date and introducing state-of-the-art teaching equipment, dive education ensures students are exposed to the latest diving technology, enhancing their learning outcomes and diving safety. This means that education providers need to regularly update their equipment to ensure that it is up to date with the latest technology in the industry, such as advanced cylinders and dive computers. This is not just to modernize the teaching experience but also to ensure that students can cope with various situations during actual dives, thus improving overall dive safety.

Enhanced education in emergency response and risk management is also crucial—trainees who can handle emergencies calmly and correctly will significantly reduce the probability of diving accidents. Therefore, educational institutions should provide trainees with adequate training in emergency handling to ensure that they can remain calm and react correctly in a crisis. Personalized and flexible teaching methods can help meet the needs of different learners, thereby enhancing their learning effectiveness and confidence. Providers can adapt lesson plans to suit the learner's progress and ability, offering personalized guidance and support to ensure that each learner can achieve their optimum level of diving skills (Lippmann et al., 2018; Roche et al., 2016). Providing multilingual course materials and instructor training in cross-cultural communication skills can help create an inclusive and understanding learning environment. This makes it easier for students from around the globe to understand and apply what they are learning and promotes cross-cultural communication and understanding, providing a richer learning experience and growth opportunities.

1.6 Definition of Key Terms

Instructional model: refers to the teaching methods and organizational structure used in the teaching process. Operational definitions include the specific content and steps of teaching methods, such as theoretical lectures, practical operations, group discussions, etc, and the forms of teaching organizational structures, such as individual tutoring, group teaching, etc.

Advanced teaching equipment: refers to equipment with advanced technology and functions used in the teaching process. Operational definitions include specific models, technical features, and functions of the equipment, such as new diving respirators, cameras under high and clear water, etc.

Teaching safety: Measures and guidelines to ensure teaching safety during the teaching process. Operational definitions include specific requirements and standards for teaching safety, such as safety facilities in the teaching place, safety and security measures for teaching equipment, and emergency treatment and rescue procedures.

Individualized needs: This refers to the provision of individualized instructional services and support based on the individual differences and needs of students.

1.7 Limitations of the Study

The limitations of this study are mainly related to sample limitations, data collection methods, external validity, reporting bias, and timeliness. Due to the limitations of the study population, the sample may be restricted to specific areas, and therefore, the findings were limited. Data collection methods may be at risk of

subjectivity and information bias, and the scope of the data was limited due to time and resource constraints. Third, the external validity of the findings may be limited because the study applies to a specific teaching and learning environment and context. Fourth, respondents may have self-reported bias in the questionnaire, which leads to inaccurate or subjective awareness of the study's findings. The findings are in a specific period, and changes in relevant factors and contexts may render them outdated. These limitations were fully considered during the research process and clearly stated in the research report to enhance the interpretability and reliability of the research findings.



Chapter 2 Literature Review

2.1 Introduction

The literature review for this study is based on the behaviorist theory and analyzes the factors that influence the Professional Association of Diving Instructors (PADI) instructional model. The literature review illustrates the factors that influence the behaviorist theory in the instructional model and describes the current development of the PADI instructional model. Relevant studies were reviewed, and a conceptual model was constructed based on the relationship between variables to determine the influence of advanced teaching equipment, teaching safety, and individual student needs on the instructional model of PADI instruction.

2.2 Literature Review

2.2.1 Instructional Model

(1) Concept of Instructional Model

An instructional model is a set of systematic and structured methods and strategies used in the educational process to guide teaching activities. It includes designing and implementing teaching objectives, teaching content, teaching methods, teaching organization, teaching evaluation, and other aspects, aiming to optimize teaching effectiveness and enhance learning efficiency (Oppenheimer et al., 2009). The teaching objective is to clarify the knowledge and skills that learners should master at the end of the course. Teaching content refers to the topics and knowledge points covered in the course, which are usually organized in a particular logical order to help learners understand and master them gradually. Teaching methods include various teaching tools and techniques the teacher uses in the classroom, such as lectures, discussions, experimentation, and case studies (Serlina & Leonard, 2020). The choice of these methods depends on the course objectives and content, as well as the needs and characteristics of the learners. Teaching organization involves arranging and implementing teaching activities, such as lectures, experiments, field trips, group discussions, and online learning. The form of organization needs to consider the characteristics of the learning environment, resources, and learners (Wang, 1976). Teaching evaluation assesses the extent to which learners have mastered knowledge and skills. The selection and design of instructional models significantly affect the teaching effect, and different instructional models are suitable for different educational contexts and learning needs. Through the systematic design of the instructional model, educators can better organize teaching activities, stimulate learners' interest, and improve the learning effect and teaching quality (Savery & Duffy, 1995).

(2) Factors Affecting the Instructional Model

The selection and implementation of an instructional model are influenced by factors. Teaching objectives and content are key determinants. For example, skill training requires a different pedagogical approach than the transfer of theoretical knowledge, and the complexity and abstraction of the content require corresponding interaction and guidance. Students' personalities, such as age, cognitive level, learning styles, and interests, have an impact on the effectiveness of the instructional model (Chen et al., 2013). In addition, students' prior knowledge and experience must be taken into account. Teachers' teaching styles, experiences, and professional backgrounds affect their ability to select and implement instructional models. In addition, teachers' familiarity with and confidence in different instructional modes also play an important role (Hallinger & Murphy, 2022).

Teaching resources are also an important influence. Available teaching equipment and technology, such as multimedia equipment and Internet resources, can significantly influence the choice of instructional model. The layout of the teaching and learning environment, laboratory conditions, etc. can also have a real impact on the model of instruction (Hallinger & Murphy, 2022). Educational policies, curriculum standards, and evaluation systems can influence teachers' choices, while educational philosophies and instructional management systems provide the framework for implementation. Cultural and social contexts should not be ignored. In different cultural and social contexts, students' acceptance and adaptability of instructional models vary, and social expectations and values of education also influence the choice and implementation of instructional models (Aguilera-Hermida et al., 2021). Finally, the evaluation of the teaching effect and student feedback are important bases for dynamic adjustment and improvement of instructional model, and a timely and effective feedback mechanism helps to optimize the teaching effect continuously. Taking all these factors into account, teachers need to make continuous adjustments and improvements in practice to find the most suitable instructional model for a particular teaching situation.

2.2.2 Behaviorist Theory

(1) Concept of Behaviorist Theory

The behaviorist theory is an educational theory that focuses on external stimuli and feedback in the learning process. The theory suggests that learning is shaping and consolidating behavior through feedback (Solehah, 2016). The focus is the teacher's guidance and management of student behavior. The central idea of the behaviorist theory is that human behavior is a response to stimuli. The goal of learning is to develop and consolidate specific learning behaviors through the right stimuli and reinforcement. Stimuli can be external, such as demonstrations given by teachers, instructional equipment, and instructional safety, or internal, such as an individual's needs and motivation. Reinforcement is the positive feedback or reward for a learned behavior

that enhances the frequency of that behavior (Harrison & Swarthout, 2014).

Teachers play an important role in behaviorist instruction by setting learning goals, providing clear instruction and modeling, and giving timely feedback and reinforcement. Teachers used methods, such as lectures, demonstrations, practice, and feedback, to facilitate student learning and behavior. Teachers manage student behavior through clear rules and discipline to ensure an orderly and effective learning environment (Cooley, 1988). A favorable teaching environment and state-of-the-art teaching equipment enhance students' motivation. The safety of teaching and learning enhances students' learning experience. Individualized teaching methods facilitate student development. Behaviorist theory focuses on observable learning outcomes and behavioral performance and pays relatively little attention to internal thought processes and cognitive activities (Cooley, 1988; Moore, 2013). The theory applies to contexts that require explicit instruction and a structured learning environment, such as the learning of preliminary skills and basic knowledge. However, the behaviorist theory does not fully explain complex learning processes and the development of advanced cognitive skills. Although the behaviorist theory has been somewhat criticized in education, it still has some utility (Moore, 2013). It provides teachers with methods and strategies to guide student behavior and emphasizes the importance of timely feedback and positive reinforcement. Teachers can use the principles of the behaviorist theory appropriately to design appropriate teaching activities and assessment methods to promote students' learning and growth according to their learning goals and needs.

(2) Advanced Teaching Equipment

With the continuous innovation of diving equipment and technology, divers can use more advanced and complex equipment, significantly improving the safety, comfort, and operational efficiency of diving. For example, modern dive computers can monitor and calculate the diver's depth, time, gas mixture, and decompression time in real time (Sepasgozar, 2020). These devices often have large screen displays, touch-screen operation, and wireless gas integration capabilities, greatly simplifying data monitoring during the dive. In addition, retrievable bladders reduce gas consumption and extend dive time by recirculating breathing gas, reducing underwater foam production, and minimizing disruption. On the other hand, high-performance wetsuits utilize more advanced materials and designs to provide better warmth and flexibility for a broader range of water temperatures and diving conditions (Lundell et al., 2019). These new devices improve the safety and comfort of diving and change how divers behave and operate underwater.

Diving course updates need to include how to operate new dive computers, the use and maintenance of recirculation, and how to select and care for high-performance wetsuits. In addition, Virtual Reality (VR) and Augmented Reality (AR) technology provide new means of teaching diving. Through VR and AR technologies, students can train in simulated natural underwater environments, thus enhancing the learning

experience and practical skills. These technologies can simulate various underwater situations and emergencies, allowing students to repeatedly practice in a safe environment and master coping with them. AR technology can also provide real-time guidance and information display during the dive, further enhancing the teaching effect and safety (Lundell et al., 2019). These advanced technologies make diving instruction more intuitive, vivid, and efficient.

(3) Teaching Safety

Diving accidents happen constantly, which puts higher demands on the instructional model. Courses must ensure that trainees not only master basic diving techniques but can also cope with various emergencies, such as equipment malfunctions, fast currents, and missing dive partners (Bhide, 2000). An essential aspect of improving safety is strengthening emergency training and risk management education so that participants can deal calmly and correctly with potential dangers. Emergency training plays a vital role in the course design. It simulates various emergencies such as equipment failure, extrication from rapids, and missing dive partners so trainees can practice repeatedly in real-life situations to enhance their coping ability. By simulating these emergencies, participants will be able to familiarize themselves with various emergency operations in a safe and controlled environment to have the confidence and skills to calmly deal with problems during actual diving (Aygün & Tüfekçi, 2020).

The course should include detailed risk identification and management strategies to teach participants to anticipate potential hazards and take preventive measures (Park et al., 2015). For example, understanding the environmental characteristics of the dive site, information on tides and currents, proper planning of dive trips, observing dive depth and time limits, and regular checking and maintenance of dive equipment. In addition, participants should learn the importance of teamwork and maintain good communication and collaboration with their dive partners to support each other in an emergency (Park et al., 2015). Diving courses not only focus on teaching basic skills but also emphasize the education of emergency handling and risk management to enhance the students' safety awareness and practical operation ability in all aspects. By constantly updating and improving safety standards and procedures, we ensure our students can always dive safely and confidently in the ever-changing diving environment.

(4) Individualized Needs

Diving students come from different backgrounds, learning styles, and ability levels, so a standardized instructional model may not meet all students' needs. This requires a more flexible and personalized approach to ensure that each participant learns and masters diving skills at a pace and in a manner that suits them (Morgan, 2009). For example, some trainees may need more time to master specific skills, especially in more technically complex areas or presenting specific challenges to the individual. In such

cases, the course design should include a hierarchy of instruction that allows participants to learn at their own pace and ability. Frustration and stress in learning can be avoided by progressively increasing the difficulty level to ensure that each learner masters the basic skills before moving on to more advanced ones (Potasman & Pick, 1997).

Group guidance and individual counseling are also important ways to enhance teaching effectiveness. Group coaching can promote communication and mutual support among trainees, especially in teamwork and submerged partner system training; through group interaction, trainees can learn from and support each other (Potasman & Pick, 1997). Individual coaching, on the other hand, can provide personalized guidance and assistance for the specific needs and problems of the trainees. For example, for trainees who feel uncomfortable under specific environmental conditions, coaches can help them gradually adapt to and overcome these difficulties through individual counseling to enhance their self-confidence and adaptability. In addition, cultural and linguistic differences are also important factors that need to be considered and adjusted in the course. PADI conducts dive instruction globally, and students from different regions may have different cultural backgrounds and language abilities (Morgan, 2009). To ensure that students from all parts of the world can effectively understand and apply what they are learning, course materials should be multilingual, and instructors must be able to communicate across cultures. For example, course materials and instructional videos can be translated into multiple languages, culturally biased examples and metaphors should be avoided, and instructors must know and respect their students' cultural backgrounds and habits to create an inclusive and understanding learning environment.

The equipment's sophistication influences the model of teaching diving courses, the instruction's safety, and the need for individualization. By continually updating technical content, enhancing safety training, and providing personalized instruction, diving instruction can continually improve and ensure that students can access high-quality training worldwide (Aygün & Tüfekçi, 2020; Sepasgozar, 2020).

2.3 Conceptual Framework

This study analyzed the impact of state-of-the-art instructional equipment, instructional safety, and individual student needs on the instructional model of PADI instruction. A model was constructed and hypotheses were set through a literature review. The impact of advanced instructional equipment on the instructional model is evident in ensuring students' learning, which is the basis for PADI instruction. The effect of teaching safety on the instructional model is manifested in practical learning. Teaching safety is always the concern of PADI out teaching. Individualized needs are reflected in the needs of different types of students. The needs are different and the

model of instruction is different. The model is shown in Fig2.1.

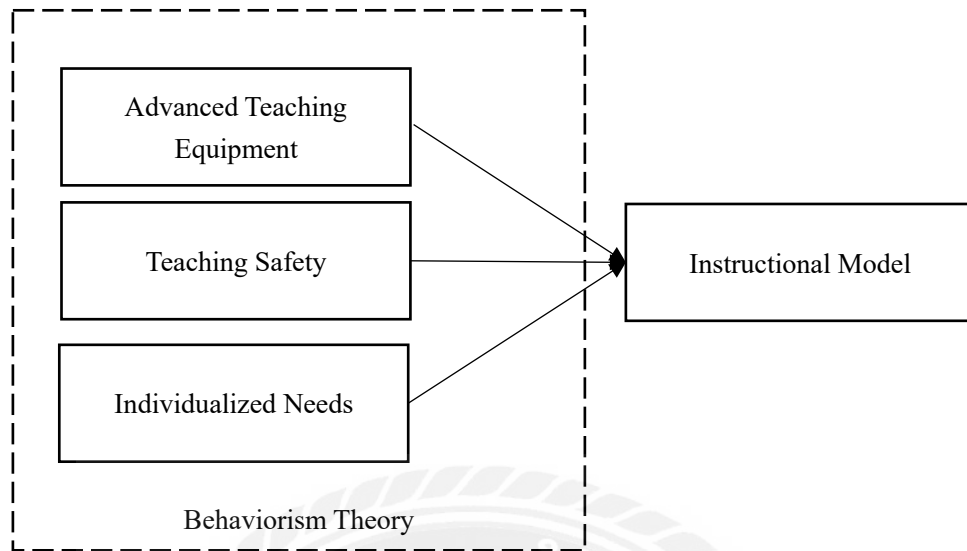


Figure 2.1 Conceptual Framework

Chapter 3 Research Methodology

3.1 Research Design

This study designed a conceptual model of the effects of advanced the equipment, instructional safety, and students' individualized needs on the instructional model of PADI instruction. In the model, the independent variables include advanced instructional equipment, instructional safety, and individualized needs, and the dependent variable is the instructional model. The quantitative method was used in this study. and a questionnaire survey was concluded. A simple random sampling method was used for the research survey.

3.2 Questionnaire Design

A questionnaire was designed based on a five-point Likert scale. The first part of the questionnaire was to collect the characteristics of the survey sample. The second part was items about advanced teaching equipment, teaching safety, and individualized needs. The questionnaire contained six questions on advanced teaching equipment, which included modernization of the equipment, ease of use, teaching effectiveness, and learning experience. There were six items on safety, which included safety equipment, safety training, safety monitoring, and risk assessment. There are six items on personalized needs. Personalized needs included course customization, adaptability of teaching style, interest stimulation, and feedback mechanism. There were four items on teaching styles. The instructional model included theory and practice, interactivity, and flexibility. A total of 22 questionnaire items were combined. A five-point Likert scale was used, with scores ranging from 1 to 5, representing strongly disagree, disagree, basically agree, agree, and strongly agree, respectively, with higher scores representing agreement with the item. The coding of the items is shown in Table 3.1.

Table 3.1 Measurement Items

Measurement Item	NO.
Advanced Teaching Equipment	
Advanced teaching equipment is used extensively in PADI dive instruction.	Q1
Advanced teaching equipment is very easy to operate and use.	Q2
Advanced teaching equipment can significantly improve our diving skills.	Q3
Advanced equipment provides a better learning experience.	Q4
Advanced teaching equipment can improve our skills in scuba diving.	Q5
The equipment is optimized for our needs.	Q6
Teaching Safety	
The safety equipment used in dive instruction is of reliable quality and protects the student.	Q7

During PADI scuba diving instruction, students receive adequate safety training to deal with emergencies during the dive.	Q8
Diving instructors have the experience and expertise to ensure the safety of their students.	Q9
Instructors are able to quickly and effectively deal with any safety issues that arise during the course of a dive.	Q10
Strict safety controls are in place to ensure that students are in a safe environment at all times.	Q11
Comprehensive risk assessments are conducted prior to diving instruction to prevent potential safety hazards.	Q12
Individualized Needs	
PADI Diving Instructions are able to customize the course to the individual needs and learning pace of the student.	Q13
Instructors are able to adapt their teaching methods to the student's learning style in order to improve learning outcomes.	Q14
Instructors are able to provide individualized instruction to meet the specific needs of the student during the course of the dive instruction.	Q15
PADI Diving Instructions have the flexibility to adjust the pace of instruction to accommodate different student learning speeds.	Q16
Instructors are able to design the teaching content according to the student's point of interest, to stimulate the student's interest in learning.	Q17
PADI Diving Instructions have a comprehensive feedback mechanism to understand and respond to students' individual needs and suggestions.	Q18
Instructional Model	
The PADI model combines theory and practice.	Q19
The PADI model is highly interactive and allows for active participation in the learning process.	Q20
The PADI model is flexible and can be adapted to different learning environments and student needs.	Q21
The PADI Diving Education Model makes full use of modern teaching technology to improve the efficiency and effectiveness of teaching.	Q22

3.3 Hypothesis

In the field of PADI (Professional Association of Diving Instructors) dive instruction research, the impact of state-of-the-art equipment, safety, and individual needs of students on the instructional model has been the subject of much attention. Several studies have shown that these factors play an important role in dive instruction, influencing teaching effectiveness and student satisfaction. Research on advanced teaching equipment points to the significant role of modern teaching tools and techniques in enhancing the quality of education. Advanced teaching equipment not only enhances the interactivity and immersion of teaching but also helps students better

understand complex diving techniques and theoretical knowledge. Specifically, for PADI diving instruction, the use of virtual reality (VR) technology and simulators can enhance learning by allowing students to experience real diving situations in a safe environment. The use of modern equipment not only improves teaching efficiency but also enhances student engagement and interest in learning. The literature review clarified the importance of teaching safety. The literature review indicates that safety is a core element in teaching diving. Diving activities have a high level of risk; therefore, it is crucial to ensure safety in the teaching process. Studies have shown that sound safety training, reliable safety equipment, and the professional quality of instructors are key factors in ensuring safety in dive teaching. In PADI's instructional model, strict safety standards and processes are seen as an important means of improving teaching quality and student satisfaction.

The need for personalization is becoming increasingly important in the field of education. Individualized teaching methods can significantly improve student learning and satisfaction. In diving instruction, students have different backgrounds, interests, and learning progressions; therefore, instructors need to use flexible teaching strategies to meet the individual needs of their students. The individualized instruction and feedback mechanisms in the PADI instructional model are considered to be an important factor in improving student learning outcomes. Through individualized tutoring and customized course design, instructors can pay better attention to the learning needs and progress of each student. State-of-the-art teaching equipment, teaching safety and students' individualized needs have a significant impact on PADI's instructional model. These factors not only enhance the quality of instruction but also improve student satisfaction and learning outcomes. Therefore, the following hypotheses are proposed in this study:

H1: Advanced teaching equipment has a significant effect on the instructional model of the Professional Association of Diving Instructors.

H2: Teaching safety has a significant effect on the instructional model of the Professional Association of Diving Instructors.

H3: Individualized needs has a significant effect on the instructional model of the Professional Association of Diving Instructors.

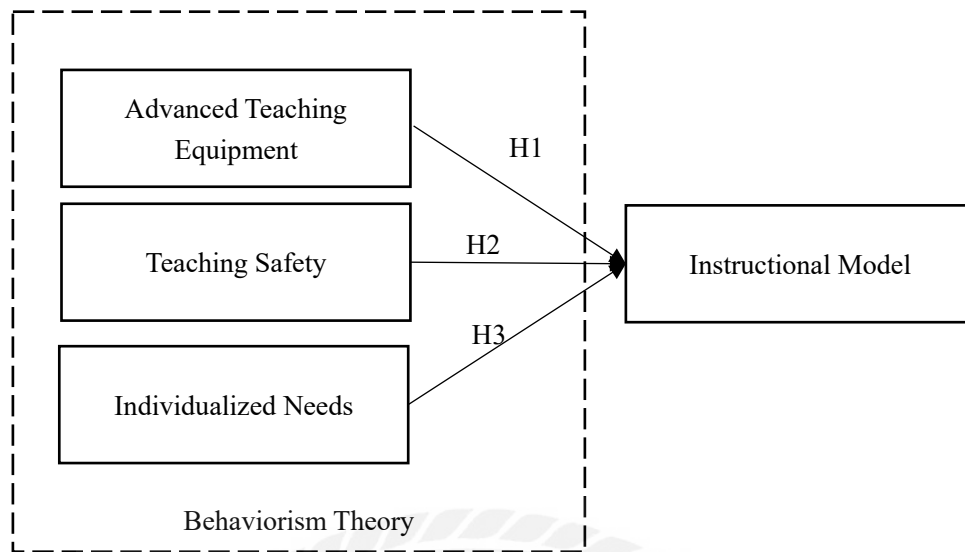


Figure 3.1 Hypotheses

3.4 Population and Sampling

This study focuses on the influencing factors of the instructional model of PADI instruction. The subjects of the study were mainly students who were involved in PADI instruction. Participants were required to have participated in a PADI diving course. It excluded those participants who have not yet participated in the instruction. The sampling method of this study is the random sampling method.

$$n = \frac{s^2 * p^2}{E}$$

In the formula (Yamane, 1973), n represents the sample size, s is the standard normal distribution quartile value, typically taken as 95% for the confidence level, and currently Z=1.96. p is the sample standard deviation, which is generally estimated as 0.5. The permissible error margin E (i.e., the maximum allowable difference between the sample mean and the population mean) is set at 0.05. The result for calculating a sample size of 400 is considered. For the random sampling method, an online survey was conducted using a website, and questionnaires were distributed.

3.5 Data Collection

In this study, the target group was those who have participated in a PADI diving course. The study identified a target group of participants who had already participated in a PADI diving course. The contact information of these students was obtained

through collaboration with PADI dive centers and dive schools located worldwide. These centers and schools have trainees from around the world, providing a broad sample base for the study. Participants were contacted via email, phone, and social media platforms to invite them to participate in the questionnaire. While sending the invitations, the purpose of the study, its importance, and the privacy measures for the participants were explained in detail to ensure that they understood the significance of participating in the survey and were willing to cooperate. The questionnaire design was a crucial step in the data collection process.

During the data collection process, the study strictly adhered to data privacy protection. All data collected from the questionnaire were anonymized to ensure that participants' personal information was not disclosed. The questionnaire survey was conducted from March 1, 2024, to June 1, 2024, and the collection method was mainly online questionnaire distribution. A total of 400 questionnaires were distributed during the survey period and 322 valid questionnaires were collected, with a validity rate of 80.5%.

3.6 Data Analysis

3.6.1 Questionnaire Reliability Analysis

Reliability analysis is the statistical process of reflecting the degree of truth of the characteristic being tested based on the consistency or stability of the results of the test scale. The more uniform the test results are, the more representative the data are of the overall situation, and the higher the reliability. Through reliability analysis, we can understand whether the questionnaire design is reasonable and make corrections to avoid misjudging the questions. Cronbach's alpha is used to evaluate the degree of internal consistency of the test items. The larger the value of Cronbach's alpha, the higher the degree of consistency between items. When the reliability coefficient of the subscales is above 0.7, the reliability coefficient of the scale or questionnaire is good; when the reliability coefficient of the subscales is between 0.6 and 0.7, it is also acceptable; when the reliability coefficient of the total scale needs to be 0.8 or higher, it proves that the overall reliability is good. The Cronbach's alpha for advanced teaching equipment is 0.900, the Cronbach's alpha for teaching safety is 0.901, the Cronbach's alpha for individualized needs is 0.891, and the Cronbach's alpha for instructional models is 0.842, and the Cronbach's alpha for each variable is greater than 0.8, indicating that the scale has good overall reliability. 0.8, indicating that the scale has high stability and consistency. When Cronbach's Alpha if Item Deleted is less than Cronbach's alpha, it indicates that the reliability of the measurement items of the survey questionnaire is better, so according to the data in the table, it can be concluded that the Cronbach's Alpha if Item Deleted of each item is less than Cronbach's alpha This indicates that the reliability of the research questionnaire is good. as shown in Table 3.2.

Table 3.2 Variable Reliability Test

Item	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted	Cronbach's Alpha
Q1	0.772	0.876	0.900
Q2	0.727	0.882	
Q3	0.707	0.886	
Q4	0.745	0.880	
Q5	0.728	0.882	
Q6	0.696	0.887	
Q7	0.827	0.868	0.901
Q8	0.713	0.886	
Q9	0.710	0.886	
Q10	0.728	0.886	
Q11	0.716	0.887	
Q12	0.728	0.884	
Q13	0.721	0.872	0.891
Q14	0.705	0.873	
Q15	0.713	0.871	
Q16	0.717	0.871	
Q17	0.715	0.871	
Q18	0.712	0.874	
Q19	0.670	0.802	0.842
Q20	0.682	0.798	
Q21	0.704	0.787	
Q22	0.652	0.810	

3.6.2 Questionnaire Validity Analysis

The Kaiser-Meyer-Olkin value (KMO) compares the simple and partial correlation coefficients between variables, ranging from 0 to 1. A KMO value should be greater than 0.7, and a KMO value of 0.9 or higher indicates that the data on the scale are "well suited" for factor analysis. The survey data showed that the overall KMO value was 0.928, with a significance of 0.000, which is less than 0.05, reaching a significant level, indicating that factor analysis could be conducted. Confirmatory factor analysis (CFA) was conducted in this study. From the results of the factor analysis of the variables, it is known that the cumulative explanatory rate of advanced teaching equipment, teaching safety, and individualized needs are 68.845%, respectively, more significant than 0.5. This indicates that they are suitable for factor analysis. Three valid factors were obtained from the factor analysis: advanced teaching equipment, teaching safety, and individualized needs.

Table 3.3 KMO and Bartlett's Test

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		0.926
Bartlett's Test of Sphericity	Approx. Chi-Square	3338.747
	df	153
	Sig.	0.000

Table 3.4 Confirmatory Factor Analysis (CFA)

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		Rotation Sums of Squared Loadings	
	Total	% of Variance	Cumulative %	% of Variance	Cumulative %	% of Variance	Cumulative %
1	7.103	39.46	39.462	39.462	39.462	22.741	22.741
2	3.02	16.79	56.262	16.799	56.262	22.6	45.341
3	1.905	10.58	66.845	10.583	66.84	21.5	66.845
4	0.588	3.266	70.111				
5	0.52	2.887	72.997				
6	0.497	2.762	75.759				
7	0.468	2.599	78.358				
8	0.455	2.529	80.887				
9	0.442	2.455	83.342				
10	0.423	2.349	85.691				
11	0.397	2.205	87.896				
12	0.393	2.181	90.077				
13	0.392	2.162	90.083				
14	0.391	2.160	90.102				
15	0.387	2.120	91.111				
16	0.382	2.100	91.455				
17	0.378	2.098	92.175				
18	0.342	1.900	94.075				
19	0.323	1.796	95.871				
20	0.268	1.488	97.359				
21	0.252	1.401	98.76				
22	0.223	1.24	100				

All the question items were divided into three dimensions by Confirmatory factor analysis, and from the results of the independent variable factor analysis, a total of four items with eigenvalues greater than 1 were extracted, which was consistent with the original topic division. And the factor loadings of the questionnaire measurement items are all greater than 0.5, and the differentiated validity between each dimension is better, indicating that each dimension is better independent. It indicates that the overall validity of the questionnaire is good, as shown in Table 3.5.

Table 3.5 Rotated Component Matrix

Rotated Component Matrix^a				
	Component			
	1	2	3	4
Q1	0.067	0.848	0.104	0.114
Q2	0.081	0.811	0.100	0.122
Q3	0.091	0.770	0.182	0.154
Q4	0.081	0.794	0.221	0.222
Q5	0.114	0.788	0.185	0.189
Q6	0.095	0.766	0.172	0.199
Q7	0.870	0.108	0.168	0.368
Q8	0.781	0.085	0.176	0.276
Q9	0.764	0.084	0.230	0.235
Q10	0.788	0.113	0.174	0.231
Q11	0.787	0.062	0.179	0.133
Q12	0.784	0.090	0.197	0.166
Q13	0.234	0.286	0.725	0.145
Q14	0.160	0.191	0.764	0.231
Q15	0.205	0.198	0.754	0.331
Q16	0.188	0.166	0.772	0.312
Q17	0.225	0.096	0.777	0.245
Q18	0.180	0.125	0.783	0.187
Q19	0.189	0.084	0.191	0.733
Q20	0.199	0.113	0.198	0.745
Q21	0.368	0.062	0.166	0.766
Q22	0.222	0.134	0.233	0.791

3.6.3 Questionnaire Data Analysis

After data collection, analysis was required, and the specific process was as follows: Firstly, the collected data were cleaned and inspected, including checking for missing data, outliers, and abnormal values. If there were issues, the data were processed or excluded. Secondly, descriptive statistical analysis was performed on the survey sample, including the sample size and proportions. Correlation analysis was conducted on the collected data to determine the interactions between variables. Finally, regression analysis was performed. Regression analysis was done using path coefficient diagrams and coefficient tables to describe the relationships between latent and observed variables, verifying research hypotheses.

Chapter 4 Findings

4.1 Introduction

The factors affecting the teaching and learning model of PADI were sorted out through a literature review. Using the quantitative research method, the collected questionnaires were analyzed for reliability and validity to determine the validity of the data collected. Descriptive statistics, correlation analysis, and regression analysis were performed on the data to explore the relationship between the variables. Through the analysis, the hypotheses were verified and the interactions between the variables in the model were clarified.

4.2 Demographic Characteristics of Participants

In this study, a total of 400 questionnaires were distributed, and 322 valid responses were received. Descriptive statistical analysis was performed on the collected data. The gender survey showed that there were 161 males (50.0%) and 161 females (50.0%). The gender distribution of the participants in this study was balanced, with males and females each accounting for 50.0% of the total population. The gender distribution of the participants showed a relatively even spread, with those aged over 45 slightly more prevalent at 35.4%; participants aged 26 to 45 accounted for 33.5%; and those under 25 accounted for 31.1%. The income distribution of the participants was diverse, with the highest proportion (25.2%) earning between 6,001 to 10,000 yuan; 22.0% earning below 3,000 yuan; 18.9% earning between 10,001 to 20,000 yuan; 18.3% earning over 20,000 yuan; and the lowest proportion (15.5%) earning between 3,001 to 6,000 yuan. The income distribution of the participants was relatively balanced: 26.4% had a high school education or below; 25.5% had a bachelor's degree; 21.4% had a master's degree; and 26.7% had other educational levels (which may include doctoral degrees, vocational education, etc.). The survey data in this study show a balanced gender distribution and diverse distributions of age, income, and education level. Gender-wise, males and females each represent half of the sample; age-wise, each age group is evenly distributed; income-wise, all income levels from low to high are represented; education-wise, participants from all educational backgrounds are included. These diverse characteristics provide a comprehensive perspective for the study, aiding in the in-depth analysis of the impact of various factors on the PADI instructional model, as shown in Table 4.1.

Table4.1 Descriptive Statistical Analysis

Item	Options	Frequency	Percent%
Gender	Male	161	50.0
	Female	161	50.0
Age	Under 25	100	31.1

	26-45	108	33.5
	Above 45	114	35.4
Income	below 3000	71	22.0
	3001-6000	50	15.5
	6001-10000	81	25.2
	10001-20000	61	18.9
	Above20000	59	18.3
Education	High school and below	85	26.4
	Undergraduate	82	25.5
	Master's degree	69	21.4
	Others	86	26.7
Total		322	100.0

4.3 Results of the Study

4.3.1 Correlation Analysis

In this study, Pearson's correlation analysis was used to explore the relationship between advanced instructional equipment, instructional safety, individualized needs, and instructional models. The Pearson's correlation coefficient (r) is used to measure the strength and direction of the linear relationship between two variables and takes values ranging from -1 to 1, where:

- 1 indicates a perfect positive correlation, i.e., when one variable increases, the other also increases.

- -1 indicates a perfect negative correlation, i.e., when one variable increases, the other decreases.

- 0 indicates no correlation.

This study analyzed the relationship between variables, which included advanced teaching equipment, teaching safety, individualized needs, and instructional model. The correlation coefficients illustrate the factors that influence the model of instruction in the diving program. The results of the analysis showed that the Pearson correlation coefficients for advanced teaching equipment, teaching safety, individualized needs, and instructional model ranged from 0.421 to 0.642, which is less than 0.9 with $P < 0.01$, indicating that there is a correlation between the variables and that it is positive but not extremely strong (i.e., the correlation coefficient is less than 0.9). All correlation coefficients have a P-value of less than 0.01, indicating that these correlations are statistically significant. a P-value (probability value) of less than 0.01 implies that the possibility that these correlations are due to random chance can be ruled out at a 99%

confidence level and that the correlations are real.

Correlation between advanced teaching equipment and instructional model ($r = 0.642$). There is a positive correlation between advanced instructional equipment and instructional model with a correlation coefficient of 0.642. Advanced instructional equipment helps to improve instructional model. Although the correlation is not particularly strong (coefficient less than 0.7), it is strong enough to show that advanced equipment has a significant positive impact on teaching patterns. Correlation between instructional safety and instructional model ($r = 0.502$). There is also a positive correlation between instructional safety and instructional model, with a correlation coefficient of 0.502. This suggests that enhanced instructional safety measures can positively influence instructional model and enhance teaching effectiveness and student satisfaction. Correlation between individualized needs and instructional model ($r = 0.520$). The positive correlation between individualized needs and instructional model suggests that meeting students' individualized needs can improve instructional model, making more flexible and effective. This correlation is at 0.520, showing a significant effect of individualized needs on the instructional model.

The results of the correlation analysis showed that there was a significant positive correlation between state-of-the-art instructional equipment, instructional safety, individualized needs, and the PADI diving instructional model. Despite the moderate strength of the correlations, the effects of these factors on the instructional model were statistically significant, indicating that they play an important role in enhancing the quality of PADI diving instruction. According to the analysis results in Table 4.2, the relationship between each variable was obtained.

Table 4.2 Correlation Between Variables (Pearson Correlation Matrix)

Correlations				
	Advanced Teaching Equipment	Teaching Safety	Individualized Needs	Instructional Model
Advanced Teaching Equipment	1			
Teaching Safety	.558**	1		
Individualized Needs	.421**	.474**	1	
Instructional Model	.642**	.502**	.520**	1

NOTE: * $P < 0.05$, ** $P < 0.01$, *** $P < 0.001$

4.3.2 Multiple Regression Analysis

The regression equation was significant, $F=58.296$, $p<0.001$. The Durbin-Watson test value was 2.127, which is between 1.8 and 2.2. The data were independent and consistent with linear regression. In the diagnostic results of covariance, the VIF values of advanced teaching equipment, teaching safety, and individualized needs were 1.222, 1.297, and 1.472, respectively. The VIFs were close to 1.5, which meets the requirement and indicates no covariance in the data. advanced teaching equipment ($\beta=0.565$, $P<0.001$), teaching safety ($\beta=0.335$, $P<0.001$), and individualized needs ($\beta=0.396$, $P<0.001$) significantly and positively affect the instructional model. These variables together explain the instructional model. Together, the variables explained the weight of 59.9% of the instructional model, which meets the requirement.

Table 4.3 Multiple Regression Analysis

Item	Unstd. B	Std. Beta	t	Sig.	VIF	F	Durbin-Watson
C	0.944		4.193	0.000		58.296 ***	2.127
Advanced teaching equipment	0.565	0.555	9.097	0.000	1.222		
Teaching safety	0.335	0.329	6.417	0.000	1.297		
Individualized needs	0.396	0.362	6.624	0.000	1.472		
R Square	0.599						
Adjusted R Square	0.592						

NOTE: * $P<0.05$, ** $P<0.01$, *** $P<0.001$

Therefore, according to the results of the data analysis, advanced teaching equipment has a significant effect on the instructional model of the Professional Association of Diving Instructors, which supports hypothesis H1. Teaching safety has a significant effect on the instructional model of the Professional Association of Diving Instructors, which supports hypothesis H2. Individualized needs has a significant effect on the instructional model of the Professional Association of Diving Instructors, which supports hypothesis H3.

Chapter 5 Conclusion and Recommendation

5.1 Conclusion

Through data analysis, this study found that advanced teaching equipment, teaching safety, and individualized needs are influential factors of the instructional model of the PADI scuba diving course. Through correlation and regression analyses, Pearson's correlation coefficients of advanced teaching equipment, teaching safety, individualized needs, and the instructional model were 0.642, 0.502, 0.520, respectively, less than 0.9 and $P < 0.001$. The correlation analyses showed that advanced teaching equipment, teaching safety, and individualized needs influence the PADI diving course instructional model. 0.001. Correlation analysis shows a correlation between advanced teaching equipment, teaching safety, individualized needs, and the instructional model. All these factors affect the PADI diving course instructional model.

These findings suggest that advanced teaching equipment can improve teaching quality and enhance student's learning experience and effectiveness. Modern equipment provides more intuitive teaching content and simulates the natural diving environment so participants can better master diving skills. In addition, teaching safety is an essential factor that cannot be ignored in a diving course. Diving is a sport with a certain degree of risk; suitable teaching safety measures can effectively reduce the potential risks to students in the learning process and improve their sense of security, thus enhancing their learning motivation and confidence. Satisfying individualized needs is also a crucial factor influencing the instructional model. Each learner has different learning abilities, backgrounds, and needs, and personalized teaching can better accommodate the needs of learners and enhance their learning outcomes. Through flexible teaching methods, instructors can tailor their instruction to the specific needs of the trainees and help them master their diving skills more effectively. State-of-the-art equipment, safety, and personalization are all critical factors that influence the instructional model of PADI diving course. Executing these factors can significantly improve the quality of instruction and the student's learning experience. Future research can further explore how these factors can be optimized to improve the diving instructional model and increase student satisfaction and learning outcomes. The findings of this study provide a necessary theoretical basis and practical reference for optimizing diving teaching.

5.1.1 Advanced Teaching Equipment Has a Significant Effect on the Instructional Model of the Professional Association of Diving Instructors

Advanced teaching equipment has a significant positive impact on the instructional model of PADI. The research results show that the Pearson correlation coefficient between advanced teaching equipment and instructional model is 0.642, and the P value is less than 0.001, indicating a significant positive correlation between the two. Advanced teaching equipment can enhance teaching effectiveness in various ways,

such as providing intuitive learning materials, simulating natural diving environments and situations, and helping participants better understand and master diving skills. In addition, modern equipment is usually more reliable and safer, indirectly enhancing the students' learning experience. Therefore, equipping students with advanced teaching equipment improves the quality of teaching and enhances their motivation and confidence, which has a significant positive impact on the instructional model of PADI diving courses.

5.1.2 Teaching Safety Has a Significant Effect on the Instructional Model of the Professional Association of Diving Instructors

Teaching safety has a significant effect on the Professional Association of Diving Instructors (PADI) instructional model. According to the study results, the Pearson correlation coefficient between teaching safety and the instructional model is 0.502, and the P value is less than 0.001, indicating a significant positive correlation between teaching safety and the instructional model. Diving is a risky activity, and suitable teaching safety measures are crucial to the success of a diving program. Through strict safety management, perfect safety equipment, and emergency plans, we can significantly reduce the potential risks to students in the learning process and improve their sense of security and trust. This not only protects the physical safety of the students but also allows them to concentrate more on their studies in a safe environment, thus improving the overall teaching effectiveness. Therefore, teaching safety has a significant positive impact on the instructional model of PADI diving courses.

5.1.3 Individualized Needs Has a Significant Effect on the Instructional Model of the Professional Association of Diving Instructors

Individualized needs has a significant effect on the Professional Association of Diving Instructors (PADI) instructional model. Pearson's correlation coefficient between individualized needs and the instructional model was 0.520, and the P value was less than 0.001, indicating a significant positive correlation between the two. Meeting the individualized needs of the learners is an essential factor in improving the effectiveness of teaching and learning. Each trainee has different learning backgrounds, abilities, and needs, and personalized teaching methods can be adapted to their specific situation to help them better master diving skills. For example, the instructor can provide more time and guidance for slower learners, while more complex exercises and challenges can be provided for faster learners. Such personalized instruction enhances learners' learning outcomes and increases their learning satisfaction. Therefore, satisfying individualized needs significantly impacts the instructional model of PADI diving courses. See Table 5.1.

Table 5.1 Hypothesis Test Results

NO.	Hypothesis	Result
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H1	Advanced teaching equipment has a significant effect on the instructional model of the Professional Association of Diving Instructors.	Supported
H2	Teaching safety has a significant effect on the instructional model of the Professional Association of Diving Instructors	Supported
H3	Individualized needs has a significant effect on the instructional model of the Professional Association of Diving Instructors.	Supported

5.2 Recommendation

(1) Equipping Instructors with Advanced Teaching Equipment

PADI diving courses should use advanced teaching equipment to enhance the teaching effect, starting with Virtual Reality (VR) and Augmented Reality (AR) technologies. These technologies can simulate the underwater environment so that students can experience and practice diving operations on land, and improve the degree of preparation before going into the water. Scenario-based training using VR equipment can help students master diving skills and emergency response capabilities. PADI also offers diving training through the use of highly accurate simulators. These simulators provide realistic underwater environments, including currents, visibility changes, and underwater creature interactions, helping students gain more experience in a safe environment.

The introduction of online learning platforms and interactive teaching software is also an effective measure. Through these platforms, trainees can access learning resources including instructional videos, online quizzes, and interactive exercises anytime and anywhere. Instructors can monitor trainees' learning progress in real-time and provide personalized guidance and feedback. Meanwhile, the effectiveness of field training can be enhanced with advanced underwater communication equipment and navigation tools. Underwater communication equipment enables instructors to maintain real-time communication with students underwater and provide timely guidance and correction of students' movements; advanced navigation tools help students better master underwater positioning and navigation skills. PADI can use big data and artificial intelligence technology to analyze students' learning data and optimize teaching content and methods. Through data analysis, instructors can understand trainees' weaknesses and make targeted adjustments to the teaching plan, thus improving the overall teaching effect. The comprehensive use of these advanced equipment and technology can significantly improve the teaching quality of PADI diving courses and the learning experience of students.

(2) Adopting Safety Measures

According to the findings, teaching safety has a significant positive impact on the instructional model of the Professional Association of Diving Instructors (PADI). To further enhance teaching safety, PADI diving courses must strengthen safety training and emergency drills. PADI should formulate a detailed safety training program to ensure students and instructors are familiar with safety procedures and emergency handling processes. Regular emergency drills simulate various emergencies that may occur so that students and instructors can respond when they encounter emergencies. Before each diving activity, ensure that all diving equipment, such as rebreathers, buoyancy regulators, dive computers, etc., have been strictly inspected and maintained. Introduce advanced underwater communication equipment to ensure that instructors and students can communicate in real-time underwater, which helps to deal with potential safety hazards promptly. In addition, underwater positioning and navigation systems are equipped to help trainees maintain a sense of direction underwater and avoid getting lost.

Optimizing the diving course curriculum and strengthening safety awareness education PADI can add a safety knowledge module to teach students diving risk assessment, diving plan development, diving buddy system, and emergency surfacing techniques. Through case studies and experience sharing, students can understand the potential risks and measures in diving and develop their safety awareness and sense of responsibility. PADI should establish a strict diving qualification and assessment system. PADI should ensure that trainees and instructors who have passed training and assessment can participate in diving activities. The training of instructors is to ensure that they have sufficient professional knowledge and skills to protect the safety of trainees in diving activities. PADI should utilize scientific and technological means to enhance safety management. Intelligent monitoring and data analysis systems are introduced to monitor various parameters in diving activities in real-time, such as diving depth, time, and cylinder pressure. Once abnormalities are detected, the system can issue timely alarms and record relevant data for subsequent analysis and improvement. In addition, safety profiles of trainees and instructors are established to record their training, assessment, and diving activities, which helps PADI in safety management and continuous improvement.

(3) Personalizing Teaching Methods

Individualized needs have a significant positive impact on the Professional Association of Diving Instructors (PADI) instructional model. To meet the individual needs of the students, PADI diving courses conduct personalized assessments and customized learning plans. PADI can conduct a detailed assessment of students before the start of the course, including diving experience, physical fitness, learning goals, and personality traits. Based on the results of the assessment, instructors can develop a personalized learning plan for each student to ensure that the content and pace of instruction meet the student's needs and abilities. Adopting flexible teaching time and

methods, PADI can provide course scheduling options, such as centralized training, phased training, and e-learning, to adapt to the student's schedule and learning habits. For trainees with limited time or special needs, one-on-one instruction or small group instruction can be arranged to provide a more flexible learning experience.

PADI should utilize advanced teaching technologies and tools. PADI should introduce Virtual Reality (VR) and Augmented Reality (AR) technologies to provide personalized simulated training environments so that trainees can practice in high simulation on land. PADI should develop online learning platforms and mobile applications to provide personalized learning resources, exercises, and assessments so that trainees can learn according to their progress and needs. PADI should establish a continuous feedback and improvement mechanism. Coaches should communicate with learners regularly to understand their learning progress and feedback and make timely adjustments to teaching programs and methods. Through data analysis and intelligent assessment tools, coaches can monitor trainees' learning performance in real-time, identify and solve personalized learning problems, and provide targeted guidance and support. PADI conducts personalized interest courses and thematic training. According to the interests and needs of students, PADI can provide diversified special courses, such as night diving, deep diving, photography diving, etc., to help students learn specific areas of knowledge and skills in depth, and enhance their interest and motivation for learning. Emphasizing the independent learning and self-management of students, PADI can encourage students to set personal learning goals and plans and provide relevant tools and resources to support their independent learning. Instructors should guide participants to cultivate self-management and independent thinking abilities so that they can actively explore and make progress in the learning process.

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Appendix

Dear Sir/Madam,

Thank you for your participation in this questionnaire survey. The survey will be conducted anonymously, and your relevant information will be kept confidential. Thank you again for your cooperation.

Part I :

1. Gender? A Male B Female

2. Age? A Under 25 B 26-45 C Above 45

3. Your monthly income? A below 3000 B 3001-6000 C 6001-10000 D 10001-20000
E Above 20000

4. Your level of education?

A High school and below B Undergraduate C Master's degree D Others

Part II: Please judge to what extent you agree with the following statement; choose the most appropriate option, and mark the corresponding number " √ . " The questionnaire used a Likert scale, ranging from 1 to 5 in which one indicates strongly disagree (or strongly disagree), two indicates relatively disagree (or relatively disagree), three indicates neutral, four indicates relatively agree (or relatively agree), and five indicates strongly agree (or strongly agree)

Measuring item	Strongly disagree	Disagree	General	Agree	Strongly agree
Advanced Teaching Equipment					
Advanced teaching equipment is used extensively in PADI dive instruction.					
Advanced teaching equipment is very easy to operate and use.					
Advanced teaching equipment can significantly improve our diving skills.					

Advanced equipment provides a better learning experience.					
Advanced teaching equipment can improve our skills in scuba diving.					
The equipment is optimized for our needs.					
Teaching Safety					
The safety equipment used in dive instruction is of reliable quality and protects the student.					
During PADI scuba diving instruction, students receive adequate safety training to deal with emergencies during the dive.					
Diving instructors have the experience and expertise to ensure the safety of their students.					
Instructors are able to quickly and effectively deal with any safety issues that arise during the course of a dive.					
Strict safety controls are in place to ensure that students are in a safe environment at all times.					
Comprehensive risk assessments are conducted prior to diving instruction to prevent potential safety hazards.					
Individualized Needs					
PADI Diving Instruction is able to customize the course to the individual needs and learning pace of the student.					
Instructors are able to adapt their teaching methods to the student's learning style in order to improve learning outcomes.					
Instructors are able to provide individualized instruction to meet the specific needs of the student during the course of the dive instruction.					
PADI Diving Instruction has the flexibility to adjust the pace of instruction to accommodate different student learning speeds.					

Instructors are able to design the teaching content according to the student's point of interest, to stimulate the student's interest in learning.					
PADI Diving Instruction has a comprehensive feedback mechanism to understand and respond to students' individual needs and suggestions.					
Instructional Model					
The PADI model combines theory and practice.					
The PADI model is highly interactive and allows for active participation in the learning process.					
The PADI model is flexible and can be adapted to different learning environments and student needs.					
The PADI Diving Education Model makes full use of modern teaching technology to improve the efficiency and effectiveness of teaching.					

