

Physical education graduate students' learning about innovation skill development

Menglong Li^{a,*}, Yujia Ren^b

Institute of Physical Education, Hunan First Normal University, Changsha, Hunan, China

^alml0713@yeah.net, ^brenyujia@163.com

**Corresponding author*

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Abstract: The cultivation of the innovation ability of students is of great significance for the development of a country and the growth of individuals. However, the current cultivation of the innovation ability of postgraduates majoring in physical education has some shortcomings temporarily, such as the lack of the cultivation of innovation ability in the curriculum system, and the shortage of an atmosphere to stimulate innovation ability in the learning environment and the monotony of teaching method. To this end, our study blends motivation theory and practical experience into the cultivation system of postgraduates majoring in physical education, puts forward corresponding construction idea and methods based on inquiry-based teaching method, conducts a deep analysis on the characteristics of the cultivation of postgraduates majoring in physical education and constructs a cultivation path for the innovation ability of postgraduates majoring in physical education based on motivation theory, with an aim to accelerate the construction of the specialty of physical education, quickly improve the teaching level of physical education in colleges and universities and foster excellent senior talents majoring in physical education for sports and educational undertakings.

1. Introduction

As a key feature of talents in the 21st century, “innovation ability” has been highly concerned by countries across the world. “The 21st Century Skills Coalition” of the United States pointed out three indispensable skill sets for the 21st century, including learning and innovation skills, digital literacy, vocational and living skills, with an aim to cultivate students’ practical ability and innovation awareness in terms of daily activities, problem solving and challenge adaptation, etc. Besides, the Global Education Monitoring Report issued by the United Nations Educational, Scientific, and Cultural Organization (UNESCO), “8 key competences” of the European Union, the Melbourne Declaration of Australia and the “21st Century Skills” of Japan all lay emphasis on the cultivation of learners’ innovation ability.

At present, innovation has become the main driving force of the economic and social development of China in the new era, and innovation ability has become a core element of national competitiveness of all countries. Colleges and universities are an important force in the implementation of the strategy of innovation-driven development and construct an innovation-

oriented nation. Heightening students' innovative spirit and creative ability is a powerful support for the construction of a powerful nation in education [1]. Therefore, to cultivate innovative talents is a significant and urgent task in the new era. Postgraduate education is a principal way that the nation cultivates high-level talents and an integral part of the country's innovation system. In the context of rapid development of global economy, the demand of China for high-level application-oriented and innovative talents is increasingly prominent and urgent [2]. In the new developmental stage, to attach importance to the cultivation of innovative talents has become a top priority in the education of international postgraduates. At present, postgraduates majoring in physical education are faced with insufficient innovation ability and serious lag in innovation mechanism. Thus, it is very essential to extend the training mode of innovative talents to postgraduate education in different regions.

Nowadays, there are some deficiencies in the cultivation of innovation ability of postgraduates majoring in physical education, mainly including the following three aspects: first of all, the curriculum system is devoid of the cultivation of innovation ability. Up to now, the problems existing in postgraduate education mainly consist of unreasonable curriculum system. The courses offered are based on the knowledge learned during undergraduate years, which is supplemented and sublimated, without much innovation. When students select courses, they only choose those in which they can pass exams easily, and don't take into account their own hobbies and interests. There are few courses that contribute to the training of innovative thinking [3]. Secondly, an atmosphere to stimulate innovation ability is absent in the learning environment.

A learning environment integrated with innovative ability in school is one of the necessary foundations of the cultivation of innovative talents, and now most colleges and universities neglect the cultivation of students' thinking in undergraduate teaching. Due to the assessment systems of different disciplines and the credit requirements of the schools, students rarely take the initiative to discover and think about problems [4]. Therefore, due to all kinds of factors, students are unable to explore and look into problems on their own, which results in insufficient motivation for innovation. Most importantly, the teaching mode is unitary. In order to improve the quality of classroom teaching, blended teaching has been vigorously promoted in schools in recent years. But some blended teaching can't effectively facilitate students' deep learning, thinking and exploration, independent research and study, and collaborative improvement, and the training and upgrading of students' ability is inadequate. For example, although some students have put in time and effort to study online and offline, there is no deep thinking processing and it is hard to transfer and apply the knowledge that they have learned. And false learning and superficial learning are ubiquitous. This situation greatly impairs students' innovation ability.

To sum up, under the framework of ARCS theory, the cultivation mode of postgraduates majoring in physical education was taken as an example in this study to fuse inquiry-based teaching, establish a cultivation mode for innovative talents in postgraduates majoring in physical education, explore a new path for cultivating innovative talents in postgraduates majoring in physical education, and provide innovative talents in physical education with a systematic, reliable and effective training mode.

2. Literature Review

2.1. Innovation ability and its cultivation in sports talents

Innovation is No. 1 impetus. Innovation education is an education that takes the cultivation of people's innovation spirit and innovation ability as the basic value orientation, and its core is to study and solve the problem of how to cultivate students' innovation awareness, innovative spirit and innovative ability. Facing challenges from information era and the knowledge society, countries

across the world have raised scientific and technological innovation and the cultivation of innovative talents to the level of national strategy. For example, Japan has issued five *Science and Technology Basic Plans* [5] in succession. The United States has published two reports, “Science in the National Interest” and “Technology in the National Interest” in succession. The Federal Government and states of Germany have approved “Top Scientific Research Funded Projects” and “Pact of Research and Innovation”[6]. These developed countries strive to increase their overall strength by carrying out the strategy of innovative development. As a developing country, China has also made many arrangements at the top design level.

Since the convening of the 1st Symposium on Creativity in China, the research of innovation education has gradually been held in great honor and valued in China. How to understand and promote innovation education has become an important topic and challenge confronting the current Chinese and foreign educational community. To press ahead with the innovation and reform of educational mode is an important direction and task in the advancement of future-oriented educational reform. In the study of innovation education, research at the level of elementary education is valued in the early stage. Later, people gradually lay emphasis on the status and function of innovation education in college education. The research results of innovation education in China are mainly embodied in: Firstly, the relationship between the connotations, content and goal of innovation education and quality-oriented education, such as the discussion on the theoretical characteristics of innovation education and quality-oriented education [6]. Secondly, the research on the idiosyncrasy of innovative talents, such as the main characteristics of innovative talents and the design of training environment, the growth characteristics and management mechanism of collaborative cultivation for innovative talents [7]. Thirdly, some practical exploration of the innovation education in colleges and universities, such as the training of innovative talents in the College of Economics & Management, Shandong Agricultural University, the practical teaching of logistics engineering for undergraduates, the practice of curriculum examination system in higher vocational colleges [8, 9]. Some research findings that apply innovation education to curriculum teaching come out. In a word, the cultivation of innovative talents is currently an important goal and task of colleges and universities. However, studies on the cultivation of innovative talents majoring physical education are still scarce.

2.2. Motivation Theory and Its Application in the Major of Physical Education

Learning motivation is an incentive and impetus that initiates and maintains individual learning activities and also an important factor that directly affects students’ learning effect. For this reason, the study of learning motivation has always taken up an important position in teaching. Among many theories of learning motivation, ARCS learning motivation model has always been a focus in the eyes of experts and scholars in the field of educational research, due to its comprehensive systematicness. ARCS motivation model was presented by Keller of Florida State University in the United States. Keller believed that there were four main factors that influenced learners’ learning motivation, that is, attention, relevance, confidence and satisfaction, abbreviated as ARCS [10]. The main train of thought was: to inspire the motivation to do something, the first thing to do was to attract people’s attention and get people interested in this. Secondly, to make them aware of the relevance between what they do and themselves. Thirdly, to convince that they can do it and help them build self-confidence. Finally, to experience a sense of accomplishment from the whole process and results, and feel satisfied. The operable motivation design system provided by this model played an important guiding role in the solution of the lack of learning motivation and the difficulty in maintaining learning motivation, strengthening learners’ self-confidence and improving their self-organized learning.

Subsequently, researchers put forward the incentive strategy and design process of learning motivation. Later, scholars also conducted deep research on this model, including the computer teaching field, online learning environment, etc [11]. All kinds of foreign studies and related experiments verified the effectiveness of ARCS theory, and fully demonstrated the superiority of this model, which was worthy of intensive study and application practice. After ARCS attracted the attention of domestic scholars, its research mainly focused on the following aspects [12]: firstly, theoretical research, such as the research on the guiding strategies to facilitate underachievers in higher vocational colleges to switch to English thinking based on ARCS theory; secondly, design and development, such as the design of micro teacher training courses based on ARCS model; thirdly, the application in various disciplines, such as Chinese, English, history and physical education.

The application of ARCS in physical education started late. It was not until after 2010 that researchers began to explore the application effect of ARCS motivation model in martial arts, basketball, aerobics dancing, track and field and other courses step by step. Despite the good results achieved, research was still inadequate and unsystematic as a whole and necessitated deep-going and extended research, as well as the construction of a systematic ARCS motivation teaching model to cultivate sports talents.

In conclusion, learning motivation is an incentive and impetus that initiates and maintains individual learning activities and also an important factor that directly affects students' learning effect. The lack of learning motivation is currently one of the most common problems in college students in China. ARCS motivation model regards motivation as the core factor of learning, and emphasizes that proper motivation is a prerequisite of a person's efficient learning, and produces a very remarkable effect on the improvement of learners' persistent motivation. Thus, taking ARCS motivation model as the theoretical framework, blending inquiry-based teaching theory and building a systematic cultivation path of postgraduates majoring in physical education are of great significance for the fostering of students' innovation ability.

3. To Construct a Cultivation Path for the Innovation Ability of Postgraduates Majoring in Physical Education Based on Motivation Theory

Guided by the motivation theory, the traditional education is blended into students' individualized training, and attention is paid to different traits and different learning needs of students. While learning professional knowledge, we should step up the cultivation of students' cooperation and innovation abilities, and explore a feasible way to fuse professional curriculum education with the cultivation of innovation ability. The specific process whereby this cultivation mode is reformed and innovated includes the following two aspects: firstly, to build an on-campus training mode suitable for the innovation and practice abilities of postgraduates majoring in physical education. Secondly, to organize practical activities complementary to the social cultivation mode. The content of practical activities can guarantee the effective implementation of the cultivation mode of innovative talents based on motivation theory. The implementation of cultivation mode should be aligned with the training goal of the major of physical education. Off-campus cooperation is to offer practice guidance, with a focus on enabling students to grasp the ability to use what they have learned. In the on-campus training mode, the curriculum teaching mainly builds a modular curriculum system oriented to motivation, introduces inquiry-based learning method and innovates the talent training mode of physical education. On competition training, some schools launch competition events related to innovation ability, which are still guided by motivation theory. Students are encouraged to take part in innovation and entrepreneurship programs for college students and challenge cups for college students, so that on-

campus and off-campus trainings can be effectively connected. See Fig. 1 for the flow chart of the cultivation of innovation ability of postgraduates majoring in physical education based on motivation theory.

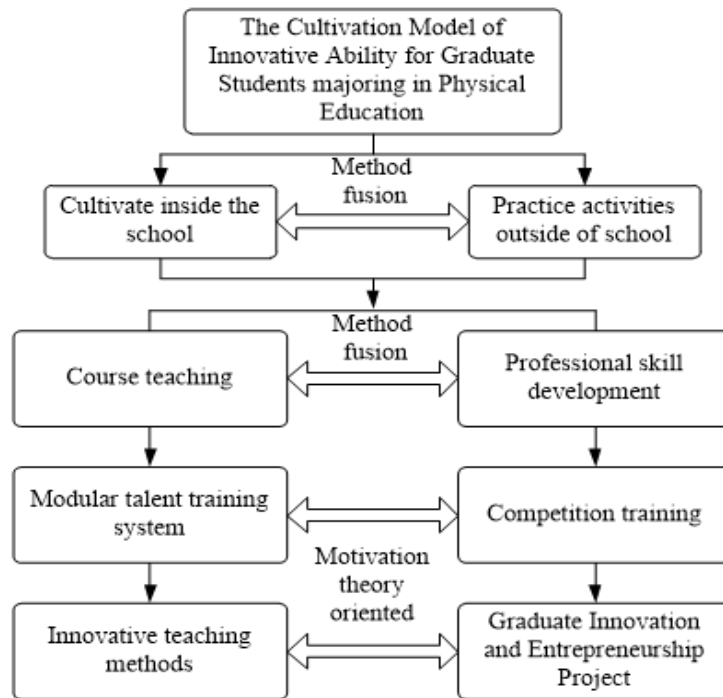


Figure 1: The Flow Chart of the Cultivation of Innovation Ability of Postgraduates Majoring in Physical Education Based on Motivation Theory

3.1. To Construct a Modular Curriculum System Based on Motivation Theory

The construction of a cultivation mode can clearly embody the characteristics of cultivation direction. The cultivation program is mainly composed of training goal, research interest, curriculum system, cultivation method and social needs. According to the characteristics of the discipline of physical education and the needs of industrial development, the curriculum system is developed based on the training goals of “consolidating foundation, emphasizing application, strengthening ability and elevating quality”, for the purpose of training versatile talents with social responsibility and innovation and entrepreneurship spirit. It also determines the knowledge and ability structure of talent training structure, and is an important guarantee of the training goal of this mode. The construction of curriculum system should not only lay a solid knowledge foundation for the discipline and lay a solid theoretical foundation for the development of the innovation ability of postgraduates, but also reinforce the cultivation of practical ability and foster postgraduates’ practical application ability to satisfy the requirements of profession. The training mode based on motivation theory mainly consists of two parts: one is professional theoretical course, and the other is social skill course. In the setting of theoretical courses, indispensable knowledge of theoretical courses is grasped. During the teaching of theoretical courses, special attention is paid to the cultivation of students’ innovation ability. On modular structure, courses can be divided into three modules, that is, professional course module, practical course module and competition training module. Modular courses mainly enhance integrated application ability and train talents through the learning of professional knowledge, scientific research methods, statistical methods and information retrieval methods.

3.2. To Introduce Inquiry-based Teaching Method and Enable the Cultivation Effect of Innovative Talents

In the cultivation mode of innovative talents based on motivation theory, some fruits have been yielded, in combination with inquiry-based learning. The introduction of inquiry-based teaching method is a way to deepen and broaden theoretical teaching and practical teaching. The inquiry is designed to select a project that really needs to be addressed, to make the learning outcome closely related to actual work. When guiding students to learn, they talk things through and communicate in groups, analyze problems arising from the practice process of exercise training, physical education and social sports guidance, and actively examine their own behaviors according to the opinions of group members. Finally, solutions to problems and countermeasures are identified under mutual learning, support and help between members. Thus, inquiry-based teaching method is also a breakthrough in the cultivation process of innovative talents, and is more in line with the cultivation requirements of senior talents majoring in physical education. During the teaching of professional core courses, inquiry-based learning method is brought in to divide the traditional teaching mode of “classroom teaching and after-class review” into the mode of “pre-class self-study, interactive teaching, extracurricular team task and periodic summary”. Through group exploration, classroom PPT representation and movement demonstration, etc. etc., a good cooperative inquiry learning environment is set up, students’ innovation awareness is enhanced, and the high-order thinking and innovation ability of the group are improved. Through the reform of teaching approach, teachers’ role, students’ role and the innovation of teachers’ teaching methods are explored, students’ intrinsic motivation and learning interest are inspired, and teachers’ teaching level and students’ innovation ability are promoted. The main process is shown in Fig. 2.

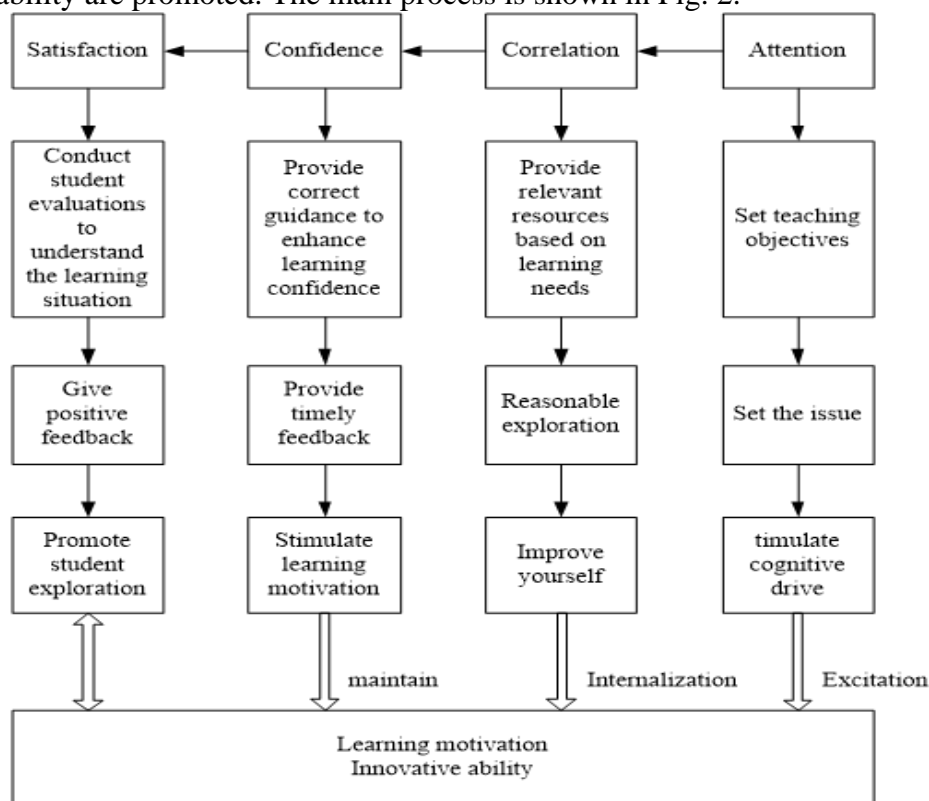


Figure 2: ARCS Motivation Teaching Mode for Innovative Talents Majoring Physical Education

3.3. To Launch Task Projects Related to Postgraduates Majoring in Physical Education

According to the requirements of the proposed model, an innovation program for postgraduates majoring in physical education was launched. For example, by mobilizing school teachers to guide students to build innovation and entrepreneurship programs for college students, during the completion of the program, students were allowed to plunge themselves into the front line of off-campus work and improve their own innovation ability through field visit, by designing and sorting out questionnaires, and querying cutting-edge knowledge of the discipline by themselves. Getting involved in project cooperation was a crucial component in the research of education reform of postgraduates majoring in physical education. On talent cultivation, how to serve elementary education and regional social and economic development was the emphasis. For colleges and universities, how to interface with emerging industries in the country, insist in focusing on the principal responsibility and work of normal education and expand non-normal education actively was the key. The innovation and entrepreneurship programs for college students and challenge cups for college students, etc. consisted of postgraduates majoring in physical education, professional teachers, and off-campus supervisors who worked with the school, and they specialized in some professional problems that needed to be addressed urgently. Through these explorations and practical studies, students' horizon was broadened, they learned to make the most of what they had learned, and effectively associated theory with practice and engaged all students in learning. By accomplishing group projects, not only students' interest in scientific research can be stimulated, but also their understanding of new knowledge can be deepened from all sides of the problems. In this process, students' communication and teamwork abilities were polished, through which they can become aware of and understand themselves. This was also the most fundamental starting point for improving students' innovation ability.

4. Conclusions

As an integral part of higher education, the healthy development of postgraduates majoring in physical education can not only drive the development of higher education and further achieve the function that "sports serves the society", but also enriches the types of senior sports talents and has an important reference value to change people's prejudice against sports majors. Through the reform of the training mode of postgraduates' innovation ability based on motivation theory in curriculum system, teaching mode and competition training, students can not only get a handle on professional knowledge on the books, but also develop innovation ability and inquiry ability, which also inspire their learning motivation and research interest. What's more, this also plays an active part in improving students' overall quality and the effect of talent cultivation.

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