Practice and Exploration of Progressive Dynamic Grouping Teaching in Primary School Swimming Classes under the Perspective of the New Curriculum Standards

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Abstract

This study conducts an experimental investigation into the implementation of a progressive dynamic grouping teaching model in primary school swimming classes. Grounded in the New Curriculum Standards, it explores whether a teaching grouping model that is both progressive and dynamic, capable of consistently meeting the diverse learning needs of different students, can better fulfill the requirements of "effective teaching, frequent practice, and regular competition" in primary school swimming instruction. The aim is to enhance educational quality, promote the realization of personalized learning, increase students' learning interest and motivation, fully improve the teaching efficiency of primary school swimming classes, and cultivate a new generation of students who are more competitive and creative.

1. Introduction

The 2022 New Curriculum Standards propose in their curriculum philosophy the need to implement the requirements of "effective teaching, frequent practice, and regular competition" for all students, emphasizing integrated teaching of "learning, practice, and competition." While highly focused on motivating and guiding all students, the Physical Education and Health curriculum advocates teaching students according to their aptitude based on differences in physical condition, foundational skills, and interests/hobbies. It proposes different learning objectives, selects appropriate teaching content, employs diverse teaching methods and learning evaluation approaches, creates fair learning opportunities for students, promotes positive learning and practice experiences for every student, enhances learning confidence, and fosters better development based on their original foundation. This implies the need to update and adjust teaching models, methods, and content to meet new educational goals[1].

This study focuses on primary school swimming instruction. In view of the shortcomings of current

grouping teaching methods in primary school swimming classes, and by drawing on research results from sports experts and previous studies on dynamic grouping teaching, closely integrating the diverse learning needs of students with the characteristics of swimming instruction, a progressive dynamic grouping teaching model is proposed. This model aims to explore teaching paths that suit the needs of different students, improve the quality of primary school swimming instruction, promote personalized learning, stimulate students' learning interest and motivation, thereby enriching the theoretical and practical system of swimming teaching methods, providing useful reference and inspiration for swimming instruction in primary schools and even other educational stages, testing its effectiveness in practical teaching, and striving to contribute practically valuable evidence for achieving the requirements of the New Curriculum Standards and supporting the development of primary school swimming courses[2].

2. Research Methods

2.1. Literature Review

Based on the research direction, relevant literature was searched and reviewed using keywords such as "swimming teaching model," "progressive teaching," and "dynamic grouping" through databases like CNKI and Wanfang. This helped clarify the theoretical foundation of this study and analyze existing research gaps, providing a logical starting point for the research.

2.2. Questionnaire Survey

A total of 100 questionnaires were distributed (50 each for the experimental group and the control group), 100 were recovered, and 95 were valid (95% validity rate). SPSS 26.0 was used for reliability and validity analysis. The overall Cronbach's α coefficient was 0.89 (split-half reliability 0.91), indicating high reliability; the KMO value was 0.81 (Bartlett's test of sphericity $p < 0.001$), suitable for factor analysis, indicating reasonable construct validity. The questionnaire dimensions covered "course expectations, participation behavior, emotional experience, sense of achievement, perception of course value," accurately measuring the level of primary school students' interest in swimming learning.

2.3. Experimental Research

Ten classes (totaling 100 students) were divided by skill level and then randomly assigned to an experimental group and a control group (50 students each). Both groups were taught by teachers trained in the "progressive dynamic grouping teaching" method. The teaching venue was the same indoor swimming pool, with 2 class periods per week (40 minutes per period), controlling for extraneous variables such as teacher level, venue, and class hours.

Both groups were initially divided by skill into Group D (beginners, no foundation in water movement, 2 subgroups each) and Group A (advanced, mastering two strokes like breaststroke/backstroke, 2 subgroups each), totaling 8 experimental subgroups.

Tracking over 17 weeks (pre-test in week 5, post-test in week 17), four types of data were collected: "skill mastery, learning interest (questionnaire data), specific physical fitness (longest swimming distance), competition participation (frequency and types of competitions)." These were compared and analyzed to identify the advantages and areas for improvement of the model.

3. Progressive Dynamic Grouping Teaching Model

3.1. Concept Definition

3.1.1. Progressive

Based on the characteristic focus of swimming instruction on technical movement learning, specific learning objectives and evaluation criteria are set for each progression stage, matching the learning ability and level of learners in each group.

3.1.2. Dynamic Grouping

This is a grouping teaching model based on grouping instruction, where flexible learning goals are set according to students' different techniques, learning abilities, and situations. Group rotations are conducted according to certain rules, and group membership is not fixed.

3.1.3. Teaching Model

Refers to a stable, concise theoretical framework of teaching structure and its specific operational activity methods, formed around a specific theme to complete

particular teaching objectives and content, under the guidance of certain teaching philosophies and based on rich teaching experience.

3.1.4. Progressive Dynamic Grouping Teaching Model
This is a teaching strategy in swimming instruction that dynamically adjusts grouping patterns based on learner ability. Its core involves real-time assessment of students' skill levels and adjustment of learning paths. The design of this model is based on the progressive nature of the learning process, constructing a hierarchical teaching framework by setting multiple phased learning objectives and evaluation criteria. On this basis, combined with the concept of dynamic grouping, flexible grouping strategies are adopted according to students' different technical levels, learning abilities, and individual differences, allowing them to enter corresponding groups for learning and practice activities under progressive requirements.

3.2. Structure of the Progressive Dynamic Grouping Teaching Model
Guided by the concept of large-unit teaching and based on the theoretical foundation of the progressive dynamic teaching model, this structure was designed according to the characteristics and conventional path of swimming skill learning. It served as the foundational guidance in

Table 1. Experimental Group Breaststroke Performance at Week 12

Indicator	25 meter breaststroke leg (seconds)	25 meter breaststroke coordination (seconds)
Average score	59.65	59.06
Best performance	42.82	39.08
Slowest score	1´31.11	1´20.25

Table 2. Comparative Analysis Table of Progressive Dynamic Grouping Lesson Plan vs. Conventional Lesson Plan

Contrast Dimensions	Advanced dynamic grouping lesson plan	Regular lesson plans
Richness of teaching content	Covers the teaching of various swimming styles such as freestyle, backstroke, breaststroke, crawl stroke, and butterfly stroke, including special techniques such as breathing, wall kicking, and diving, as well as physical training, game competitions, and swimming knowledge expansion.	It mainly revolves around breaststroke and crawl stroke, involving some swimming techniques and simple games, and the content is relatively concentrated.
Teaching progress rhythm	The early stage focuses on basic skills and safety knowledge, and then multiple swimming styles are taught in parallel. Competitions and practical activities are frequent, the rhythm is tight, and the difficulty is gradually increased.	The early stage focuses on familiarity with water and basic skills, the middle stage focuses on breaststroke and crawl swimming, and the later stages include consolidation exercises and exams, with a slower pace.
Teaching objectives focus	Focus on cultivating students' various swimming skills, competition ability, independent learning and thinking ability, emphasizing the cultivation of willpower, teamwork and sportsmanship, and improving comprehensive quality	Focus on students' mastery of basic swimming skills, cultivate students' interest in learning and hard-working spirit, while emphasizing safety education
Diversity in teaching methods	Adopt dynamic group teaching, demonstration teaching, group cooperative learning, competition teaching and other methods to flexibly adjust teaching according to students' level and progress	Focus on demonstration teaching and practice teaching, consolidate skills through teacher explanations and student exercises, and incorporate game and competition elements into some courses
Assessment method	Phased assessments are combined with final assessments, including competitions, skill tests, etc., to comprehensively evaluate students' learning processes and results.	The final centralized assessment is mainly based on skills tests to test students' mastery of the content they have learned.

the experimental teaching.

The progression structure diagram revolves around multiple swimming strokes and related skills to arrange progressive teaching. The design of this diagram consistently follows the principle of gradual progression in swimming teaching, while also incorporating our school's Rainbow Education as a seven-color progression, possessing distinct school characteristics.

3.3. Characteristics of the Progressive Dynamic Grouping Teaching Model

3.3.1. Dynamic Progression

During the teaching process, close attention is paid to the dynamics of students' skill acquisition. For students with significant progress and proficient skills, higher-level challenges are provided promptly. For students with weak foundations or slow progress, more basic consolidation exercises are patiently given to ensure steady improvement.

3.3.2. Practical Reinforcement

The entire teaching process centers on a variety of water-based practice activities, ranging from basic water breathing and floating, to segmented movements and full coordination of various strokes, and further to practical competitions, creating ample practice opportunities for students.

3.3.3. Multiple Evaluations

The single evaluation model is abandoned, and comprehensive evaluation methods such as teacher assessment, student self-assessment, and peer assessment are utilized. Teacher evaluation focuses on objective indicators like skill standardization and progress range; student self-assessment promotes self-reflection and clarifies personal strengths and weaknesses; peer assessment encourages mutual learning and common progress.

3.3.4. Individual Attention

High importance is placed on individual student differences. For students with special circumstances such as poor physical coordination or fear of water, personalized guidance and psychological support are provided to help them overcome difficulties, gradually build confidence, and ensure that every student feels valued and cared for in their swimming learning.

4. Research Results and Discussion

4.1. Questionnaire Results Analysis

4.1.1. Interest Differences between Experimental and Control Groups

For the control group, the percentage of "Agree" for most questions ranged between 60% and 85%. For Experimental Group A: The percentage of "Agree" for key positive questions increased to 75%~90%, and the percentage of "Disagree" for some questions (e.g., Q5 "Not active in class activities") was significantly higher than the control group (Experimental Group A 82% vs Control Group 65%).

Experimental Group D: Interest level was between the control group and Experimental Group A, but the percentage of "Agree" was generally higher than the control group (e.g., Q16 "Swimming class is fun" 80% vs Control Group 72%).

Statistical Significance: Chi-square tests showed that Experimental Group A had significant differences from the control group on key questions such as Q2 (Actively participate in movement learning) and Q7 (Feel supported) ($p < 0.05$), indicating that the dynamic grouping model may enhance students' sense of participation and support.

4.1.2. Key Question Analysis

Positive Interest Indicators: For the item 'Look forward to swimming class,' the "Agree" percentage for Experimental Group A was 88% (Control Group 78%), indicating that dynamic grouping significantly enhanced students' course anticipation. For the item 'Practice diligently and seriously,' the "Agree" percentage for Experimental Group D was 83% (Control Group 75%).

Negative Interest Indicators: For the item 'The course is boring,' the control group's "Agree" percentage was 22%, while Experimental Group A decreased to 12%, suggesting that dynamic grouping reduced the sense of boredom through diversified activities. For the item 'Hope class ends quickly,' the control group's "Agree" percentage was 20%, while Experimental Group A and D decreased to 10% and 15% respectively, reflecting that the teaching

model optimized the classroom time experience.

4.1.3. Effect Verification

Advantages of Progressive Dynamic Grouping: Experimental Group A performed best in "Skill Mastery" (Agree 85%) and "Cooperative Learning" (Agree 80%), showing that the progressive task design effectively enhanced the sense of achievement and cooperative awareness. Experimental Group D performed prominently in "Competitive Incentive" and "Goal Clarity" (Agree 82%), suitable for stimulating students' competitive awareness.

Limitations of the Control Group: The control group performed weakly in "Course Attractiveness" (Agree 15%) and "Willingness for Independent Practice" (Agree 60%), indicating shortcomings of the traditional teaching model in practical application and knowledge transfer.

4.1.4. Questionnaire Conclusion

The questionnaire analysis results show that the progressive dynamic grouping teaching model is highly effective. Through open-ended questions, it was gathered that students generally suggested increasing the number and duration of weekly swimming lessons, while also hoping to incorporate more fun activities in class to enhance the learning experience. Although the data indicates that the experimental group leads the control group in various indicators, the strong interest in swimming among control group students should not be overlooked.

4.2. Experimental Data Analysis

4.2.1. Teaching Group A Experimental Data Analysis

After one semester of practice, the significance levels for both breaststroke kick and full breaststroke performance between the experimental and control groups at week 5 were greater than 0.05, suggesting no difference between the two groups at that time. An independent samples T-test on the data from week 17 showed significance levels of 0.001 (<0.05) for the test results, indicating that a significant difference had emerged.

The experimental group not only showed significant improvement in the basic abilities of the breaststroke project but also progressed further in mastering new skills. During the one-semester teaching period, the learning efficiency of students in Experimental Group A was significantly higher than that of the control group, with 85% of students having completed learning the freestyle skill and 52% having mastered the decomposition skills of the optional butterfly stroke.

In terms of specific physical fitness, the average swimming distance for experimental group students was about 202.86 meters at week 5, and 328.57 meters at week 17, an increase of approximately 61.9% (the test distance upper limit was 400 meters due to time constraints). The control group showed a 44.6% increase.

At the level of competition organization, the experimental group completed a total of 12 competitions, covering multiple formats including 2 individual races, 3 relay races, 2 endurance races, and 3 fun competitions. The control group completed 5 competitions, mainly consisting of 3 small races and a single relay race. The experimental group, through differentiated competitions (such as tiered endurance races), achieved ability-tiered improvement, maximizing individual ability development, and cultivated competition rule understanding and awareness through role-playing (referee, audience). The control group focused more on individual performance, with room for further improvement in teamwork and rule awareness cultivation; furthermore, fun activities accounted for only 40%, resulting in lower participation enthusiasm.

4.2.2. Teaching Group D Experimental Data Analysis

Students in the experimental group had mastered the breaststroke skill relatively well by week 12. Records were kept for the completion times of the 25-meter breaststroke kick and full breaststroke coordination. The score distribution range was wide, indicating significant individual differences.

At the 17th week, the average maximum swimming distance of students in the experimental group reached 114.71 meters. Among them, 30.4% of the students could complete a 200-meter breaststroke without assistance, while only a small number (2 students) could swim 50 meters or less. The control group focused on catering to all students, resulting in a slow overall teaching progress. As a result, 38.2% of the students in this group still remained in the stage of learning basic breaststroke skills.

4.2.3. Competition Organization Comparative Analysis

Both groups reflected the integrated concept of "learning, practice, and competition" in their competition design, but there were significant differences in competition frequency, goal orientation, and implementation strategies. The control group included 4 formal competitions, primarily focused on basic skill testing, with rule penetration mainly through oral emphasis. The experimental group completed 7 competition activities, reinforcing technical application through high-frequency competitions.

4.3. Comparative Analysis of Teaching Implementation Content and Progress

By applying artificial intelligence technology to analyze two lesson plans regarding teaching content and schedule arrangements, significant differences were found, reflecting different educational philosophies and focuses.

4.3.1. Teaching Group A Comparative Analysis

The progressive dynamic grouping lesson plan excelled in the integration of "learning, practice, and competition," better aligning with the requirements of the New Curriculum Standards and comprehensively enhancing students' swimming skills and overall literacy. The conventional lesson plan was more solid in basic skill teaching but had room for improvement in enriching teaching content, increasing practice fun, and strengthening competition elements.

4.3.2. Teaching Group D Comparative Analysis

Teaching Pace: Initially, both lesson plans started from basic skill teaching with similar progress. As the course progressed, the pace of the progressive dynamic grouping lesson plan accelerated, continuously introducing new skills and competition activities; the conventional lesson plan maintained a relatively steady pace, gradually deepening breaststroke teaching, with the later stage focusing mainly on review and consolidation.

Degree of Personalization: The progressive dynamic grouping lesson plan dynamically grouped students based on skill differences, providing personalized teaching content and goals for students of different levels; the conventional lesson plan adopted a unified teaching pace and requirements, paying relatively less attention to individual student differences.

4.3.3. Teaching Advantages of Progressive Dynamic Grouping in Reflecting "Learning, Practice, Competition"

Advantage in Learning: For example, when learning backstroke/crawl kick, students of different levels can receive targeted guidance in corresponding groups.

Advantage in Practice: Practice difficulty adjusts dynamically with student learning progress, preventing students from losing interest due to difficulty that is too high or too low.

Advantage in Competition: Competitions run through the entire teaching process, creating a competitive atmosphere, stimulating students' learning enthusiasm, and motivating students to actively engage in practice.

4.3.4. Shortcomings of Conventional Teaching in "Learning, Practice, Competition"

Learning Content: The range of swimming knowledge and skills accessible to students is relatively narrow, which makes it difficult to meet the interests and needs of different students and is not conducive to students' comprehensive mastery of swimming sports skills.

Practice Methods: Practice content and difficulty lack dynamic adjustment. Regardless of students' skill mastery level and learning progress, training follows unified practice content and difficulty, making it difficult to meet the learning needs of students at different levels. This may lead to some students developing fear of difficulty due to overly high challenge, while others fail to improve effectively due to insufficient challenge.

Competition Arrangement: Limited competition opportunities make it difficult for students to fully experience the competitive atmosphere and also fail to comprehensively test learning outcomes or enhance students' competitive ability.

Comprehensive Literacy Cultivation: There is less interaction and communication among students, and a lack of teamwork opportunities, which is not conducive to cultivating students' teamwork spirit and communication skills.

4.4. Shortcomings of the Progressive Dynamic Grouping Teaching Model

During the teaching process, teachers need to simultaneously attend to two or more groups of students at different progression stages, which places high demands on teachers' teaching ability and management skills.

Dynamic grouping may widen the gap in students' sports ability, easily induce a sense of inertia in some students, and potentially disrupt the orderliness of teaching organization.

Due to factors such as poor physical coordination, extreme fear of water, etc., individual differences are magnified in learning outcomes [3].

5. Conclusion and Suggestions

5.1. Conclusion

Through experimental research on the progressive dynamic grouping teaching model, the effectiveness and feasibility of this model in improving the quality of primary school swimming teaching have been verified. This model can formulate flexible teaching plans and grouping strategies based on students' different learning needs and ability levels, enhancing the targeting and effectiveness of teaching. Simultaneously, the model emphasizes cooperation and communication among students, promoting common progress and personalized development.

5.2. Suggestions

Strengthen teacher training to improve teachers' teaching abilities and management skills; improve teaching plans and evaluation standards to ensure the scientificity and rationality of teaching; enhance personalized tutoring for students to help them overcome learning difficulties; pay attention to students' mental health education to cultivate students' self-confidence and cooperative spirit.

Disclosure statement

The author declares no conflict of interest.

References

[1]   General Office of the CPC Central Committee, State Council. Opinions on Comprehensively Strengthening and Improving School Sports Work in the New Era. 2020-10-15. 2025.3.20.

[2]   Wang S P, Qi R A, 2021, Exploration of the Current Situation and Development Strategies of Primary School Swimming Teaching//Physical Training Branch of the Chinese Society of Sports Science, National School Sports Alliance (Swimming Project) Summary Compilation of Papers from the 3rd International Aquatics Forum - Poster Exchange Henan University, 365-367.

[3]   Yang S H, 2023, Construction and Practice Analysis of Integrated Primary School Swimming Curriculum. Primary School Students (First Edition), (07): 61-63.