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Research on Influencing Factors of Medical Students' Interest in Computer Basic Curriculum Learning

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Abstract

Enhancing medical students' interest in Computer Basic Curriculum Learning learning is crucial for comprehensively improving their computational thinking and information literacy. This study conducted a questionnaire survey among students at Hubei University of Medicine. The results indicate that factors such as the institution's learning environment, academic atmosphere, and examination integrity; the course's nature and assessment methods; teachers' qualifications, pedagogical approaches, and content delivery; as well as students' learning motivation, gender, and academic background significantly influence medical students' interest in this Computer Basic Curriculum. By integrating the unique characteristics of computer science education, this research explores strategies to maximize student engagement, which holds profound significance for cultivating well-rounded medical professionals [1].

Keywords: medical students, computer basic curriculum, learning interest, influencing factors, learning motivation

1. Introduction

Learning interest, as the core intrinsic driving force behind students' learning, not only directly affects their learning attitude, but also profoundly shapes their learning motivation. When students develop a strong interest in learning content, leading them to actively engage in the learning process and foster a positive and proactive learning attitude. In the medical education system, "Computer Basic Curriculum" is a commonly offered public compulsory course in medical colleges, plays a crucial role in teaching. The course content is rich and diverse, covering multiple modules such as computational thinking fundamentals, computer system architecture, operating system applications, Office software operation, computer network principles, information security protection, and medical computer applications. Its teaching objectives not only require students to proficiently master the practical application skills of computers in the medical field, but also aim to cultivate students' computational thinking ability, enabling them to use computer science thinking methods to analyze and solve medical problems.

With the acceleration of medical informatization, a solid computer foundation has become an essential literacy for medical students to adapt to future medical development. Medical students with good computer literacy can more efficiently acquire, analyze, and utilize medical information resources, thereby enhancing their professional practice ability and comprehensive literacy. Therefore, researching how to enhance the learning interest of medical students in the course of "Computer Basic Curriculum", fully mobilize their learning enthusiasm, and effectively improve their computer application level has become an important issue that urgently needs to be explored and solved in the field of medical education, with significant practical significance and profound educational value.

2. Current Status of Computer Basic Curriculum Learning for Medical Students

As the main force of the future medical industry, medical students face a heavy academic load in university. They not only need to master public basic courses, but also need to learn a large number of challenging professional courses. Under the influence of academic pressure, most medical students tend to focus their studies on professional courses and pay insufficient attention to "Computer Basic Curriculum" course . In addition, due to the extensive knowledge system and wide coverage of the course, many medical students have developed a fear of difficulty during the learning process, which has led to a low interest in learning.

Taking Hubei University of Medicine as an example, the school has set the "Computer Basic Curriculum" course in the first year . In order to comprehensively understand the computer application level of freshmen, a special

questionnaire survey was conducted, and 349 valid questionnaires were finally collected. Among the surveyed students, 164 were male (47%) and 185 were female (53%).

Survey data shows that 67.4% of students have personal computers at home, and 90.3% of students are proficient in using computers for daily activities such as social chatting, email sending and receiving, entertainment games, and online shopping. However, only 30% of students have basic operational skills in office software applications. Specifically, 35.67% of students have not proficient in Word document processing, 48.58% of students are not familiar with Excel, and 58.64% of students feel unfamiliar with operating PPT presentations. Regarding learning expectations, 65.65% of students hope to master commonly used office software through course learning to meet future job requirements; 25.38% of students expect to delve deeper into computer software and hardware knowledge to enhance their comprehensive application abilities.

In the survey of students' perceptions of course learning, a 5-point Likert scale was used for quantitative evaluation (1 point represents complete opposition, 2 points represents relatively opposition, 3 points represents neutrality, 4 points represents relatively agreement, and 5 points represents complete agreement). The specific data is shown in Table 1.

Table 1. Description of Course Interest Status

Question items	Mean	Standard deviation
I enjoy taking computer classes because I find them enjoyable.	3.41	0.960
I think it's interesting to discuss computer related knowledge with teachers and classmates.	3.42	0.978
I think the courseware, homework, and activities taught by the teacher are very interesting.	3.38	0.986
The content of the computer class taught by the teacher is easy to understand.	3.62	0.944
The way the teacher taught computer class helped me understand the content of computer course.	3.94	0.849
The homework left by the teacher helps me learn computer science.	3.95	0.878
I never get distracted in computer class.	2.79	1.020
I like the teacher to explain more deeply and extensively.	3.61	0.993
What I learn in computer class can help me solve problems in my daily life.	4.01	0.815
I enjoy answering questions raised by teachers during lectures.	3.21	1.006

3. Analysis of Influencing Factors of Medical Students' Interest in Computer Basic Curriculum Learning

Research shows that most medical students recognize the practical value of computer technology in daily life and its role in enhancing future medical work. This recognition of practicality serves as a crucial foundation for motivating their learning, especially after they have gained a basic understanding of the knowledge system. Their enthusiasm for active learning significantly increases, with some students even requesting more in-depth teaching extensions from their teachers. However, in terms of practical learning, medical students exhibit complex behavior patterns: while there is a general desire to improve their computer application skills, the reliance on teacher-led instruction is quite prevalent. Students often complete tasks assigned by teachers passively, engaging only in exercises during class time and rarely using their free time for additional practice. This learning approach greatly limits the depth and breadth of skill improvement[2].

Based on a systematic analysis of literature review and questionnaire survey, it is found that the core factors influencing medical students 'interest in computer learning can be summarized into three dimensions: individual students, teacher and school environment. These factors are interwoven with each other, jointly shaping medical students' learning attitudes and behaviors, which provides a key entry point for subsequent teaching reform.

3.1 Student Factors

In educational and teaching activities, students, as the primary learners, play a crucial role in shaping and developing their interest in learning. Based on the actual teaching situation , we have conducted in-depth research and found that personal factors such as gender differences, grouping by science and humanities subject backgrounds, and learning motivation orientations significantly influence medical students' interest in computer learning.

To systematically investigate the above influencing factors, this survey designed a 17-item evaluation system and used a 5-point Likert scale for quantitative assessment. Through in-depth analysis of the survey data, the relevant results will provide detailed insights to accurately understand students' learning needs and optimize teaching strategies. The specific survey results are detailed in Table 2.

Table 2. Results of Personal Factors Survey

Question items	Mean	Standard deviation
Computer is an essential tool in today's society, so I want to learn it well.	4.35	0.725
I am curious about computers and want to learn more about their working principles and uses through computer courses.	3.90	0.917
In order to improve my personal abilities and qualities, and prove my value and abilities, I want to learn computer science well.	4.10	0.840
Learning computer science well can earn the attention and love of teachers and classmates.	3.43	1.005
Mastering computer skills can lead to obtaining skill certificates, such as computer proficiency exam certificates.	4.45	0.691
I care a lot about my computer exam results and ranking.	3.86	0.878
For computer content that I don't understand, I will discuss with classmates or seek help from teachers.	3.68	0.941
Other classmates' interest in learning will infect me and increase my interest in learning computer science.	3.81	0.869
I want to learn computer science because my previous computer grades were pretty good.	3.06	0.991
I think computer courses are very interesting. After class, I often consciously spend a lot of time researching more information about computers outside of textbooks.	3.28	1.043
Learning computers well helps to learn how to use more advanced software.	4.13	0.822
I envy others for their proficient computer skills and impressive presentations. I also want to improve my skills by studying computer science.	4.01	0.836
In studying computer courses, I feel a sense of satisfaction every time I learn an operation or software.	4.07	0.850
Computer courses are closely related to daily life, and learning computer knowledge can be of great help to my daily life.	4.11	0.837
I study computer science more to better master a skill.	4.23	0.779
Learning computer science well can help find an ideal job.	3.93	0.878
Learning computer science well can prepare me for further education.	4.02	0.811

3.1.1 Gender Differences Factors

Based on the teaching practice data of our school, male students generally have more interest in learning computer courses than female students. This difference may be caused by the comprehensive effect of many factors, such as social and cultural environment and thinking mode preference, such as men's natural attention to computer technology field.

3.1.2 Professional Attribute of Arts and Sciences

Our school's major offerings show a clear disciplinary trend: 13 majors including Clinical Medicine, Anesthesiology, Medical Imaging, Stomatology, Pediatrics, Psychiatry, Preventive Medicine, Biological Sciences, Pharmaceutical Engineering, Pharmacy, Traditional Chinese Medicine, Medical Laboratory Technology, and Intelligent Medical Engineering only admit science students, while the Health Service and Management major only admits humanities students. Meanwhile, 8 majors including Nursing (including foreign-related directions), Rehabilitation Therapy, Applied Psychology, Information Resource Management, Public Utility Management, and Information Management and Information Systems implement a policy of combining arts and sciences. In the social cognitive system, computer technology has long been classified under the category of science and engineering. This inherent concept makes humanities students prone to difficulty and distance when facing computer courses, which in turn leads to a certain advantage for science students in terms of learning interest.

3.1.3 Driving Factors of Learning Motivation

Learning motivation, as the core internal driving force influencing students 'learning behaviors, plays a crucial role in the effectiveness of computer courses. It can be categorized into three types: surface-level motivation, which is driven by external pressures such as meeting parental expectations or passing exams; deep-level motivation, which stems from a strong interest in computer knowledge or is attracted by the charm of teachers' teaching;, leading to active engagement in learning and achievement motivation, which aims to obtain practical rewards (such as scholarships) or pursue academic competitive advantages.. Research data indicates that these three types of motivation have significantly different impacts on learning interest, with achievement motivation having the most significant motivational effect, followed by deep motivation, and surface motivation having a relatively weaker impact[3].

3.2 Teacher Factors

In the teaching activities, teachers and students constitute the main body of teaching, Teachers, as the central organizers, play a leading role in planning teaching objectives, implementing the teaching process, selecting teaching methods, and managing the classroom. The professional qualities, teaching abilities, personal charm, and overall competence of teachers, along with the teaching methods they choose and the content they design, are all significant factors that influence students' interest in computer learning[4].

In this study, 6 items were selected to construct the teacher factor evaluation system, and a 5-point Likert scale was used. The specific survey results are shown in Table 3, and the data will reveal the correlation characteristics between teacher factors and students' learning interest from the dimensions of teaching ability, knowledge reserve, classroom interaction, etc.

Table 3. Survey Results of Teacher Factors

Question items	Mean	Standard deviation
The professional level of a computer teacher will affect my attitude towards learning computer science.	3.50	1.030
My passion for learning computer science is entirely determined by the personal charm, computer skills, and teaching abilities of the subject teachers.	3.30	1.089
The computer teacher's lectures are lively and interesting, inspiring thinking, and have strong teaching abilities. The teaching methods of the teacher have a significant impact on my learning.	3.83	0.904
Compared to the effort I put in, the teacher's evaluation of my homework makes me feel gratified.	3.76	0.853
If I fail a computer exam, it will make me feel frustrated and worried about the next exam.	3.81	1.001
The computer teacher often encourages us in class and provides learning advice.	3.80	0.875

3.2.1 Teacher Quality

As a core quality and essential condition for the smooth implementation of educational and teaching activities, teacher quality has a significant positive impact on students' interest in computer learning. Research has shown that the stronger a teacher's professional ability and the higher their moral cultivation, the more they can stimulate students' enthusiasm for learning. Teachers with solid professional knowledge, excellent teaching skills, and good professional ethics can not only set an example for students with a rigorous academic attitude, but also create a harmonious learning atmosphere through active teacher-student interaction, effectively promoting students' transition from passive learning to active exploration. For example, teachers can significantly enhance students' learning interest and effectiveness by regularly participating in professional training, optimizing teaching design, and paying attention to students' personalized needs[5].

3.2.2 Teaching Methods

Teaching methods are systematic approaches used by teachers to achieve educational goals, and their effectiveness directly impacts the quality of teaching and students ' learning experiences. Research on medical students shows that diverse and innovative teaching methods can significantly boost their interest in computer learning. By effectively utilizing multimedia tools, organizing group collaborative learning, and conducting practical operation competitions, teachers can not only enhance classroom interaction and fun, but also stimulate students' learning

enthusiasm. For instance, introducing project-based teaching in programming courses allows students to acquire knowledge through practical operation which can effectively enhance their participation and learning interest.

3.2.3 Teaching Content

Teaching content, as the core information carrier in educational activities, not only imparts knowledge but also guides values. In the teaching of Computer Basic Curriculum, scientifically designed content can effectively stimulate students ' interest in learning and national pride.Taking the teaching of "supercomputer" as an example, by introducing the brilliant achievements of "Shenwei Light of the Taihu Lake Lake", which won the world top 500 championship for three consecutive years from 2016 to 2018, students can not only deeply understand China's technological breakthroughs in the computer field, enhance national self-confidence, but also stimulate students' enthusiasm for learning by using living examples to guide students to establish their lofty ambition of contributing to the national scientific and technological development. Thus, carefully crafted teaching content can enhance students' interest in computer learning by both imparting knowledge and inspiring emotions.

3.3 School Factors

As the main venues for students' learning activities, the educational ecological environment constructed by schools has a profound impact on students' interest in learning. Research has shown that the supply of learning conditions, the level of academic atmosphere construction, and the discipline and standards of exam conduct in schools all have varying degrees of influence on students' enthusiasm for learning computer courses. This study focuses on school factors and sets up two survey items using a 5-level Likert scale. The specific survey results are shown in Table 4. Data analysis will focus on dimensions such as learning resource allocation, campus learning atmosphere, and exam system management, revealing the inherent correlation between school factors and students' learning interests[6].

Table 4. Survey Results of School Factors

Question items	Mean	Standard deviation
In computer course learning, the hardware equipment and auxiliary software provided by the school are very comprehensive.	4.00	0.830
The school provides us with many opportunities to practice and operate computers.	4.12	0.905

3.3.1 Learning Conditions

High quality learning conditions are the material basis for stimulating students' interest in computer learning. Research shows that there is a significant positive correlation between learning conditions and students' interest in learning. The richer the teaching resources and more comprehensive the practical platforms provided by schools, the stronger students' interest in learning. Specifically, well-equipped hardware facilities such as professional computer classrooms, high-performance computer labs, and open learning spaces provide students with a good theoretical learning and practical environment; The establishment of a virtual simulation experimental environment breaks the limitations of time and space, allowing students to engage in diverse simulation practices. By constructing smart computer rooms, equipping them with advanced graphics processing equipment, and opening up independent internships, universities have significantly increased students' enthusiasm for participating in computer practice projects and effectively enhanced their interest in learning[7].

3.3.2 Construction of Academic Atmosphere

A good academic atmosphere is an important spiritual driving force for students to actively learn. A positive and uplifting learning atmosphere can subtly influence students' learning attitudes and behaviors, significantly enhancing their interest in computer courses. Universities can promote knowledge exchange and mutual assistance among students by organizing diverse learning activities, such as academic lectures, class learning experience sharing sessions, dormitory learning group competitions, etc; At the same time, encourage students to participate in subject competitions, innovation and entrepreneurship projects, can stimulate their learning enthusiasm and innovation ability. Regularly held computer programming competitions can not only test students' learning outcomes, but also create a positive competitive atmosphere of "learning from each other", promote students to actively explore computer knowledge, and enhance their interest in learning.

3.3.3 Exam Style Management

As an important manifestation of school education integrity, exam style directly influences students' interest in learning. A fair and just examination environment can enhance students' recognition of the value of learning, while

a negative examination atmosphere can seriously dampen students' enthusiasm for learning. If cheating occurs during exams, some students may obtain high scores through improper means, which not only undermines the fairness of the exam but also makes diligent students feel defeated, leading to a loss of confidence in their studies. This negative effect will also be transmitted between generations, affecting the learning attitude of the next generation of students. Therefore, strengthening the construction of examination atmosphere, through measures such as improving the examination system, strengthening invigilation, and carrying out integrity education, and establishing rigorous examination discipline, can effectively maintain students' learning enthusiasm and stimulate their learning motivation.

4. Conclusion

This study reveals through systematic analysis that the stimulation of medical students' interest in learning computer courses requires the construction of a collaborative education model of "teacher-led, school supported, and student-centered". Teachers not only need to accurately identify differences in students' gender, academic background, learning motivation, and other dimensions, but also need to deeply integrate the concept of teaching according to students' aptitude into teaching design, combine course characteristics with personal teaching advantages, flexibly use diverse teaching methods, and enable every student to find a suitable growth path in computer learning. At the same time, as the builders of the educational ecosystem, schools need to improve hardware facilities, optimize learning spaces, and strengthen the construction of practical platforms to provide students with high-quality learning conditions; And with the construction of academic atmosphere as the starting point and the management of examination atmosphere as the guarantee, create a positive and uplifting campus atmosphere. This dual wheel drive education strategy not only effectively enhances the interest and application ability of medical students in computer learning, but also has profound significance in cultivating composite medical talents with both medical professional literacy and information technology capabilities, thereby elevating the quality of medical talent cultivation and promoting the modernization of medical education.

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Author Contributions

Yong Yu (1982-), male, Shiyan, Hubei Province, professor: Writing original draft, Methodology, Data curation, Formal analysis, Software, Funding acquisition.

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