

A Flipped Classroom Teaching Design for Medical English Courses Based on the 5M Concept

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Abstract:

This paper presents an innovative flipped classroom model for Medical English courses, integrating Wenzhou Medical University's **5M teaching concept** (Medicine, Mobility, Mutualization, Multidimensionality, and Morality) to address evolving pedagogical demands in medical English education. Traditional approaches often fail to sufficiently develop profession-specific language skills while nurturing medical humanism. Our design leverages the flipped classroom's core principle-shifting knowledge transfer online and reserving in-class time for active knowledge internalization-within a structured 5M framework: **Medicine** --- Profession-anchored content (e.g., healthcare systems, clinical terminology); **Mobility** --- Ubiquitous learning via mobile platforms (China University MOOC, WeChat...); **Mutualization** --- Collaborative tasks and peer evaluation; **Multidimensionality** --- Blended online/offline skill development; **Morality** --- Ethical orientations embedded in medical contexts. Using a General Medical English unit "Medical System" as a case study, we demonstrate the five-phase workflow: **Pre-class**: (1) Micro-lectures and automated quizzes on medical terminology; **In-class**: (2) Interactive debates on healthcare costs, (3) film analysis (*Dying to Survive*), and (4) oral summaries; **Post-class**: (5) Essay writing ("High-cost medical care in China") and peer review via UltraStar platform. Results indicate enhanced medical English proficiency, critical thinking, and ethical awareness through contextualized practice. The model fosters student autonomy, with much more engagement in online forums and significant improvement in discipline-specific writing. However, differential outcomes based on learners' autonomy highlight a key limitation: self-disciplined students thrive, while others require additional scaffolding. This study confirms the 5M-flipped model's efficacy in bridging linguistic competence and medical professionalism. Future iterations should explore tiered support systems to maximize inclusivity. The framework offers a replicable blueprint for medical English education globally.

Keywords:

Flipped Classroom, Teaching Design, 5M Concept, Medical English Course

1. Introduction

The integration of specialized English proficiency with medical expertise is paramount in cultivating globally competent healthcare professionals. Traditional medical English instruction, however, often struggles to balance linguistic development, clinical relevance, and ethical grounding. [1] This paper presents an innovative flipped classroom model underpinned by Wenzhou Medical University's 5M teaching concept (Medicine, Mobility, Mutualization, Multidimensionality, and Morality). Designed through seven years of pedagogical refinement, the framework redefines learning dynamics by shifting foundational knowledge acquisition to online platforms while reserving classroom time for interactive knowledge internalization and application. By anchoring content in authentic medical contexts (Medicine), leveraging mobile technology (Mobility), fostering peer collaboration (Mutualization), diversifying skill development (Multidimensionality), and embedding medical ethics (Morality), the model transforms passive learners into active participants. Using a General Medical English course unit as illustration, we demonstrate how this approach enhances profession-specific language competence while nurturing critical medical humanism. The design addresses contemporary educational imperatives but also highlights challenges in supporting diverse learner autonomy within blended environments. [2]

2. Flipped Classroom

The flipped classroom is a learning model that shifts ownership of learning from teacher to student by reorganizing time inside and outside the classroom. As a typical change in information-based education, the flipped classroom has taken the world by storm and was recognized by The Globe and Mail as "a major technological change affecting classroom teaching". The earliest practitioner of the flipped classroom was Salman Khan, an American. In 2006, he started posting his own teaching videos on YouTube to help students learn outside the classroom, and these soon attracted widespread attention in the education field. [3]

According to the flipped classroom teaching concept, the traditional classroom has been revolutionized, with students now "absorbing out of class" and "internalizing in class". This blended teaching mode combines online and offline elements, enabling students to independently absorb knowledge outside the classroom, and the traditional classroom then becomes a space for teacher-student and student-student interaction, facilitating learning activities such as raising and answering questions, solving puzzles and problems, exchanging ideas, displaying results, presenting academic findings and personalized tutoring. [4]

3. The 5M Teaching Concept

Wenzhou Medical University has been implementing a new round of college English teaching reforms since 2017, setting up a series of transitional "Bridge-Courses" between general college English and medical professional English such as General Medical English. Based on over seven years of teaching reform experience, the course team has developed the 5M teaching concept: Medicine, Mobility, Mutualization, Multidimensionality and Morality.

3.1. Medicine

In terms of teaching content and resources, all the teaching materials selected and all the teaching activities designed by the course team are related to medicine. Each unit is centred around a particular medical theme and closely follows the characteristics of the medical profession.

3.2. Mobility

In terms of course designs and teaching methods, we make full use of the advantages of the Internet+ era. Mobile teaching is adopted to create ubiquitous classrooms in order to provide students with a learning environment in which they can participate by simply moving their fingers.

3.3. Mutualization

In the process of teaching and evaluation, the course enables every student to participate in all the learning activities, communicating and sharing with each other through mutual help and cooperative tasks.

3.4. Multidimensionality

In terms of presenting teaching outcomes, the course comprehensively expands students' medical English proficiency and competence by creating a multidimensional learning environment, both online and offline, both inside and outside the classroom, both practically and academically, both in language learning and in major learning. Meanwhile, it promotes students' all-round development by organizing and guiding them to participate in English competitions at all levels through a variety of second classroom activities.

3.5. Morality

In terms of ideological and political education, the course focuses on cultivating students' medical humanism. Integrating this ideological and political guidance into teaching process, the course team guides students to develop ethical values and a positive outlook on life. This is essential for students to head for the right direction they should take in their future medical careers.

3.6. A teaching model based on the 5M concept

In the guidance of the 5M concept, the course team designed a teaching model based on the flipped classroom approach and implemented it successfully.

(1) Online knowledge transfer

Teachers provide medical English teaching resources, such as videos, audios, texts and courseware, through online platforms. They help students to set their own learning plans for each unit. In this process, students are required to combine teachers' online guidance with their own learning independence to facilitate knowledge transfer.

(2) Supervision and feedback

Teachers make use of online homework, quizzes and exams to supervise and test students' learning effect, providing feedback on their progress.

(3) Offline knowledge internalization

According to the feedback from the previous learning stage, students are helped to internalize the knowledge by answering questions, solving problems, classroom

lectures and discussions. During this process, students can practise their creative thinking and communication skills. Through discussions on medical ethics, medical disputes and other unit topics, they can also further develop medical humanism and enhance their English speaking abilities.

(4) Knowledge application

By designing course tasks in real-life situations and encouraging students to work together to complete them, teachers can help students to develop a sense of cooperation as well as medical humanism in their practice of knowledge application.

(5) Presentation of learning outcomes

With the help of Internet+ technologies, students are able to present their learning outcomes in a more lively and vivid way, which increases their sense of achievement and learning motivation, thus creating a stronger desire to construct new knowledge and progress to the next stage of learning. This process aims to improve students' IT literacy, and enhance their scientific awareness and research ability, as well as their English writing skills, through tasks like information searching, abstracts reading and medical papers writing. (Figure 1)

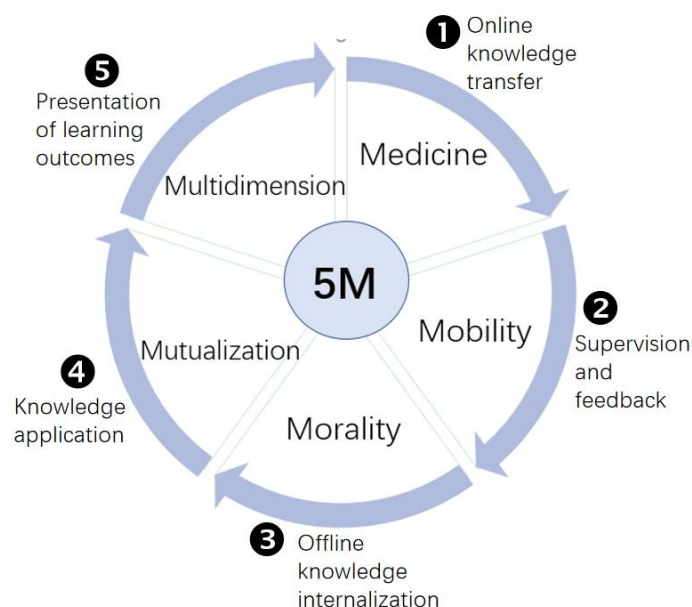


Figure 1. A teaching model based on the 5M concept.

4. A Case of Flipped Classroom Teaching Design for General Medical English Course

The textbook for this course is English for Medical Humanities published by East China Normal University. Take the first unit of this book “Medical System” as an example. The title of Text A is “Daring to Practice Low-cost Medicine in a High-tech Era”. It discusses the issue of healthcare costs, which is a real concern in today’s society.

Before the offline class, the teacher uploads micro-class videos to the online course platform, China University MOOC, each of which is 5–10 minutes long. These videos explain the background information, text structure, and linguistic key points of this unit. The teacher also provides the text courseware along with the keys to post-text exercises. Students are required to complete the exercises independently within a

certain period of time. They must also understand the language points, memorize the key lexical chunks, and proofread the exercises. The online unit quiz, which includes all the above knowledge, is then released at a set time. It tests students' mastery of the knowledge in forms of single-choice, multiple-choice, fill-in-the-blanks and right/wrong questions, among others. Once the quiz opens, students have to finish it within 20 minutes, or the system will automatically submit it. Each student's questions and options are randomly arranged to ensure the authenticity of the quiz results. Once students have submitted their quiz, the online course platform automatically marks them and shows the grades to students. Students then post their questions in the online forum about any difficulties or confusions they experienced during their independent study of this unit. The teacher who is on duty for this unit answers students' questions promptly by replying to their posts on the forum. Through this teaching design, the teacher can facilitate online knowledge transfer, as well as monitoring and testing feedback. [5]

In the following offline class, the teacher first assesses students' understanding of the key language points of this unit through dictation and questioning about lexical chunks and sentence patterns. This will ensure that students have a basic grasp of the knowledge in this unit. The teacher then assigns further tasks to guide students to consolidate the knowledge they have learned in the previous stage, thus promoting the process of knowledge internalization. These tasks include:

4.1. Oral summary

Once students have a basic grasp of the key expressions about the unit topic, such as “health care system”, “over-testing and over-treatment”, “generic drug”, “patented medication” and “defensive medicine”, they are asked to make an oral summary of the text. This summary is sent to the class WeChat group as a voice message. The teacher then randomly selects a few of these summaries to play and comment on. It ensures that every student has the opportunity to speak, and that the teacher can provide personalized guidance in the limited classroom time. Students who have more spare capacity for study are able to continue learning from each other via the WeChat group after class.

4.2. Question and answer

Play a movie clip from *Dying to Survive* and ask the students the following question: What problems does this clip reflect? What's the main cause of these problems? In answering these questions, students will inevitably repeat the key expressions learned from the text, such as “high drug prices”, “shortage of medical resources”, “medical ethics” and “medical inequality”, thus further enhancing their ability to use the language skilfully in this field.

4.3. Group discussion

Each group of students are required to choose one of the following topics for discussion: (1) What factors lead to high-cost healthcare? (Medical structural imbalance, e.g. hospitals' reliance on drug sales; over-testing and over-treatment; the complex circulation of drugs from pharmaceutical factories to patients; etc.) (2) If you were a member of the Chinese healthcare plan administration, what measures would you take? (To adjust the medical structure; to diminish doctors' pressure; to strengthen the supervision of medical institutions and drugs, etc.)

4.4. Writing assignment

Students are required to write an English composition of at least 300 words on the topic of “High-cost medical care in China”. The writing should be based on the outcomes of the group discussion and must include the following three points: (1) In China, expensive medical care, high drug prices, excessive examinations and over-treatment do exist. (2) What are the main causes of these phenomena? (3) If you were an official from the Chinese Ministry of Health, what measures would you take to reduce medical costs?

4.5. Learning outcomes and evaluation

After class, students are required to post their English compositions to the “UltraStar” online course platform’s assignment section. The teacher has set a peer-assessment assignment on the platform in advance, which asks students to grade 5 to 6 essays from other groups. Outstanding essays will be set as examples for all students to read and learn from.

In these teaching designs, the teacher guides the students to internalize knowledge, and the students develop their teamwork competence and medical humanities in the practice of knowledge application. It also increases their learning enthusiasm and sense of achievement through mutual evaluation and learning outcomes presentation, thereby generating a stronger desire to construct new knowledge and progress to the next stage of learning. [6]

5. Conclusions

Based on the 5M concept, the flipped classroom teaching model for General Medical English course makes full use of the technological advantages of the “Internet+” era, enabling students to achieve “online absorption and in-class internalization” in course learning. This teaching model provides students with greater learning autonomy and flexibility, which helps those who are more capable to further explore how to use English for their own professional studies. However, for a small number of students with weaker self-learning abilities, this teaching model may not necessarily be more advantageous than traditional offline classrooms. Therefore, how to stratify and organize students according to their self-learning abilities is an issue that needs to be considered and solved in the current implementation of this teaching model, and requires further research and discussion.

Conflicts of Interest

The author declares that there is no conflict of interest regarding the publication of this article.

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