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Original Article

Developing a curriculum model of English teaching for master's degree nursing education in a Chinese medicine university

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ABSTRACT

Objective: English for Specific Purpose (ESP) is the essence for developing scientific research capacity, which is a core component for postgraduate education. The objective of this article is to develop a curriculum model for ESP of Master's level nursing education in a Chinese medicine university.

Method: A three-year action research approach with continuous reflection and modification was used to develop an ESP curriculum based on the RICH model. A total of 78 students of Master's Science in Nursing enrolled in 2016–2018 and three course teachers in Nanjing University of Chinese Medicine participated in the study. The ESP curriculum based on the RICH model involved research-based learning topics (R), integrated curriculum(I), cooperative learning methods(C), and humanistic outcome (H).

Results: The passing rate of the students was 100%, the excellent rate was 79.5%, with an average score of 83.16 ± 3.43 . All students were satisfied with the ESP course design and acknowledged the process of "growing up under the pressure". Four students have published five articles in the journals included by Science Citation Index (SCI).

Conclusions: The study exerted a positive effect on the ESP teaching and learning and provided new ideas for the ESP curriculum integration of Master's Science in Nursing in China.

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What is known?

English for Specific Purpose (ESP) is the essence for developing academic research capacity, which is a core component for postgraduate education. The RICH model, designed for English teaching as a foreign language for students majoring in English in China, was used to reform the ESP curriculum successfully.

What is new?

The present study develops a curriculum design applying the RICH model to improve the ESP teaching and learning effect for master's degree nursing education in a Chinese medicine university and showed a positive outcome.

1. Introduction

1.1. Background

In the healthcare context, English language accounts for more

than 80% of medical journals, databases, online resources, and international academic conferences [1]. English language and academic research capacity are two known core components of postgraduate students in China. Skilled English language ability, especially, English for Specific Purpose (ESP), plays a crucial role in smoothing academic activities and thereby improving professional development and communication [2]. However, studies on the ESP curriculum of Master's level nursing education in some colleges in China are insufficient due to lack of systematic and specialized teaching materials or continuous use of undergraduate textbooks, which makes the teaching and learning process tedious and boring. It follows that those graduate students cannot benefit from the ESP curriculum or further improve themselves. After more than 12 years of teaching exploration in the ESP curriculum in nursing, we argued that the ESP curriculum for students of Master's Science in Nursing (MSN) should focus on strengthening the understanding of disciplinary knowledge in nursing science and enhancing international academic communication ability through English language acquisition. When curriculum activities are designed, educational principles and theories should also be followed and integrated to ensure the efficacy of teaching and realize the win-win situation of teachers and students. Considering this purpose, we selected a theoretical model abbreviated to "RICH", tailored for English

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language education in China, to reform the ESP curriculum for students of MSN.

1.2. Theoretical foundation

RICH is an acronym of the first letter of the four components of a theoretical model. **R** describes the process of **Research-based learning**, which means students are encouraged to actively participate in small-scale project research to accumulate knowledge and learn methods from it under the guidance of the teacher. Research content and topic selection are not limited to the textbook. The letter **I** refers to **Integrated curriculum**, which reflects the combination of all aspects of English language abilities with characteristics of interdisciplinary integration, extending language learning to various fields of humanities and social sciences, thus allowing students to “explore and understand disciplines in various fields of the world through topic research based on life experience”; this component enables students to naturally learn other subjects. **C** stands for **Cooperative methodology**, advocating the cooperation between students and teachers, between students themselves, and between teachers. **H** is meant to achieve **the Humanistic outcome**, that is, to improve students’ interpersonal skills and comprehensive quality by the process of enhancing students’ potential and existing knowledge [3,4].

As an exploratory pedagogical theory, the RICH model mainly originated from the theoretical system of Socrates’s “elicitation teaching theory” known as “midwifery”, Vygotsky’s “social constructivism” theory and Brunauer’s “discovery learning” theory [3,5]. “Socrates method” advocated that teachers should seek to guide students to discover the subject matter rather than simply tell them what they need to know [6]. Vygotsky emphasized that interaction and communication are an important part of personal cognitive development [7]. Brunauer proposed students should participate actively in the learning process to fully motivate students’ potential and enable them to grow from learning [8]. Based on the theoretical foundation, teachers, known as the learning organizer, and students, as the learning subjects, attain the teaching objectives through interaction. The RICH model has been used in college English educational innovation in some Chinese universities, aimed to initiate learner’s spirit of curiosity, discovery and scientific research, advocate research-based learning, and promote language acquisition and professional technical capabilities by cooperation and interaction between teachers and students [5,9,10]. All these approaches are precise in accordance with the demands of graduate students in nursing. To date, there is no study on the application of the RICH model to the ESP curriculum for MSN. The purpose of the article is to develop an the ESP curriculum model for MSN based on the RICH model and to evaluate its effect. In the spirit of “teachers as curriculum researchers” [11,12], an action research design was adopted by the process of practice reflection - peer support - professional inquiry [13].

2. Materials and methods

2.1. Participants and team members

In total, 78 students of Master’s Science in Nursing in Nanjing University of Chinese Medicine were included in the study. Twenty-eight students were recruited in September 2016, 29 in September 2017, and 21 in September 2018. Of the 78 students, 5 were male nurse students (6.4%) and 73 (93.6%) females, with an age range of 22–32 years. Fifty-five (70.5%) were fresh graduate students with no clinical practice experience and 23 (29.5%) were on-the-job

graduate students. Sixty-five students (83.3%) had systematically learned the specific course “ESP for Nursing” during their baccalaureate nursing program. According to the two degree tracts in China, 23 participants were the academic degree students and 55 were the professional degree students of MSN.

The ESP teaching research team comprised a professor, two associate professors and one assistant professor who are core course directors of Nursing Theory, the ESP for Nursing, Nursing Research and Evidence-based nursing, respectively. All members have Ph.D. and RN licensure. Team meetings were regularly held to analyze the training goals and curricula arrangement of MSN program. According to the MSN program plan of the university, **ESP curriculum** (36 h) and **Nursing Theory** (36 h) usually start in the third week and ended in the 11th week of the first semester. Subsequently, **Nursing Research** (18 h) starts at the 7th week and lasts for six weeks of the same semester, which followed by the course, **Evidence-based Nursing** (18 h) in the next semester of the first academic year.

2.2. Establishment of research-based learning topics

Based on the RICH model and the teaching guideline of the ESP for nursing graduate students, the teaching team members agreed that the ESP curriculum in MSN should be focused on language to deliver effective professional knowledge and scientific research methods in order to fulfill the requirements of advanced nursing education. Thereafter, a new ESP curriculum plan contents were developed based on knowledge integration around Nursing Theory, Nursing Research, and Evidence-based Nursing. Seven clinical symptom management topics were identified as the research-based learning problems including pain management, incontinence, wound care, falls, insomnia, physical activity, and nausea and vomiting. During the process of learning ESP, each learning group selected one topic to study. Noticeably, students were required to search for the relevant journal articles included in Science Citation Index (SCI) and identify a proper nursing theory applicable to the selected symptom management topic for intensive reading and discussion and develop their conceptual framework by critical logical thinking. These specific conceptual frameworks could also be used to guide their learning the courses of “Nursing Research” and “Evidence-based Nursing” to ensure consistency and linking of all the core courses of MSN program and promote the training of comprehensive quality and research-based thinking. Based on the two-year teaching practice and reflection in 2016 and 2017, we revised the teaching plan and proposed some new requirements. In addition to the proper nursing theory applicable to the selected symptom management topic, research articles were considered in the selection of research-based learning topics in 2018. The research types involved theoretical analysis, experimental research design, cross-sectional study, qualitative study, systemic review, and case-report.

2.3. Integration of English language capacity with knowledge of scientific research training

There was a total of 36 class hours for the ESP curriculum, 4 h each week, and the course lasted for 9 weeks during the first semester. Although we emphasized the specific purpose for the advanced professional development of nursing postgraduate students, we still acknowledged the importance of language skills. A series of reference books, learning source and websites were recommended to the students, including “Medical English Writing and Translation” edited by Li and Pan, Published by the Wuhan

University Press in China, WeChat public platforms such as “Nursing English”, “Medical English translation” and some official websites of SCI journals. TED videos on medical English were regularly released on the internet teaching platforms. The students were required to repeat the main points in class or submit the listening homework after class. In the first two weeks of the ESP course, medical English word-formation rules were introduced systematically to help all students grasp the skills and tips of professional English vocabulary of nursing specialty. During the subsequent seven weeks, the students were grouped into the seven learning topics of symptom management as stated above. Four or five students for one topic were included in a cooperative team to implement research-based learning. Four class hours were distributed to each learning topic, and 28 class hours were needed for the seven learning topics.

2.4. Cooperative methodology and flipped classroom

The study used a systematic and meticulous organizational form of teaching and learning. After grouping and assigning the task, the specifically designed learning sheets were given to the MSN students to guide them to develop thinking and reflection. (1) **Preparation and cooperation before class.** Once the specific symptom management learning topic was assigned to each group, the group members would search the database such as PubMed, Medline or Embase for related articles by using “nursing model” or “theoretical model” as keywords combined with the selected symptom management learning topic. After the repeated screening, the students chose 2–3 academic articles and sent them to the professor and other group students one week before class. For example, the “urinary incontinence” learning group found that the Trans-theoretical Model (TTM), Theory of Planning Behavior (TPB) and Self-efficacy Theory were commonly used in the management of patients with urinary incontinence after searching the database. They stated that they were more interested in the RCT design articles of TTM in urinary incontinence intervention. Followed by consultation with the course teachers, they began to read intensively, prepare PPT carefully and reported the main points of articles for class discussion. Other students previewed the selected articles and finished the pre-prepared learning sheets before the class presentation. (2) **Pre-test in the class.** In each class, the teacher will conduct a 30-min English-Chinese translation or vocabulary test on the related learning topic to assess for the knowledge reserve of each student and help them underscore the key terms or sentences. (3) **Class presentation.** Each group selected one representative to share their opinion and reflection by PowerPoint presentation in 20 min while the remaining students listened to the report carefully and kept a good record. (4) **Discussion and questioning.** Once the report was concluded, the students were given 10 min to prepare to clarify their thinking and began to discuss and question. During the discussion, both teachers and students talked in English. Teachers encouraged students to express their opinion on the topic and clarified or answered the students’ questions. (5) **Summary.** Finally, the teacher encouraged students to identify and summarize the typical and useful English expression and drills specific to the research type of article.

2.5. Evaluation of humanistic outcome

A comprehensive evaluation was adopted. Teachers encouraged and praised the students’ good performance promptly. The time and quality of classroom speech, submission of learning sheets, and peer evaluation of presentation were included in the formative evaluation that accounted for 60% of the total test score. Regarding

the remaining 40%, we used a final written examination as the summative evaluation.

Table 1 summarizes the procedure of learning and flipped class of the ESP curriculum for MSNs based on the RICH model.

2.6. Course reflection and inquiry

After each class, teachers wrote teaching reflection and gave feedback to all students about present problems. All students were invited to anonymously write the learning reflection and advice for the ESP curriculum at the end of the curriculum. As stated above, during the process of teaching action research, we thought that the selection of articles with different research design was beneficial to accumulate advanced vocabulary, native sentence structure to improve writing skills. In 2018, we proposed a query expansion method to center on symptom management, theoretical framework, and research design to focalize research-based learning topics.

2.7. Ethical considerations

Ethical approval obtained from the Research Ethics Committee of the university. All students underwent the planned learning activities and volunteered to the teaching evaluation to submit their works for research purpose with anonymity. The decision would not affect their learning and final learning outcome.

3. Results

3.1. Curriculum evaluation

The passing rate of the ESP courses for 78 nursing graduate students was 100%, with an average score of 83.16 ± 3.43 . Sixty-two students scored more than 85, which accounts for 79.5%.

3.2. MSN students’ high-degree satisfaction with the ESP curriculum

This action study showed that 74 students were highly satisfied with the learning method based on the RICH model, which accounts for 94.9% of the 78 students. Four students were satisfied with the learning method.

3.3. Learning reflections from MSN students—growing under the pressure

All 78 students’ reflections of learning experience were analyzed by qualitative coding and categorization. All MSN students realized the importance of the ESP curriculum and the process of “growing up under the pressure”. (1) The new curriculum model provided new insight on learning ESP for nursing. The MSN students stated that they not only studied more medical English vocabulary but also gained more knowledge on application of a theoretical framework to nursing practice and common nursing research methods by means of reading several journal articles written in English. “This is a new trial to expand our horizon”. (2) The reading speed and accuracy of translation were improved step by step. For example, a girl said, “My English is very poor, which worried me a lot. In the beginning, I could not finish reading one article a day, it was very difficult to understand and translate the obscure English articles, but I realized they are paramount for my academic life, I will never give up and I believe myself ... step by step, I could read two or three articles per day, I am very happy for my progress”. Another student stated, “I was frustrated at my ability of translation

Table 1
The procedure of learning and flipped class of ESP for MSNs based on the RICH model.

The RICH Model	Traditional classroom learning	Online learning after class
R Determination of research –based learning topics	<ul style="list-style-type: none"> • Preparing 7 research-based learning topics. • Issuing learning sheets 	<ul style="list-style-type: none"> • Recommending the common nursing theories and other learning resources, such as SCI journals, WeChat public platform of health care English.
I Integrated curriculum design	<ul style="list-style-type: none"> • Strengthening learning materials of medical English word-formation rules and terminology • Listening and oral English practice • Grouping cooperation and presentation preparation 	<ul style="list-style-type: none"> • Online-delivery of the learning materials • TED videos or other medical English speech videos • Searching and reading English articles to familiarize with the common research design and nursing models
C Cooperative methodology and flipped classroom	<ul style="list-style-type: none"> • Pre-test in the class for knowledge preparation • Grouping and cooperation for each topic; summarizing and accumulating the common medical English vocabulary or key drills specific to the research designs • Class presentation of the main ideas of the paper, discussion and questioning • Organizing and optimizing the work sheet to complete the reflection and construct the mind map or theoretical framework and related intervention 	<ul style="list-style-type: none"> • In advance, the articles were sent to other group members to read and preview • All students should submit learning sheets.
H Evaluation of humanistic outcome	<ul style="list-style-type: none"> • Teachers and students practiced English and scientific thinking during communication. • Teachers encourage and praise students in a timely manner. • Making an objective and comprehensive evaluation by written test, students' self-assessment and mutual evaluation 	All students' online submitted learning reflection and experience for further enhancement.

during each pre-test, but I felt enlightened after my professor's explanation. The medical English is really extensive and profound; I must work hard to get more". (3) Oral English practice could improve students' confidence and bravery. One student wrote, "I have never learning Medical English before, and I feel distressed and worried about my learning. However, one time, the teacher encouraged and praised me although my speech was tongue-tied. I was so excited and confident that I love the course from then on. I hope the times of the ESP curriculum could be added". (4) Growing under the pressure. "At the beginning, I was under great pressure. I even thought that I cannot finish the learning tasks. With the increasing contact and repeated practice in class and after class, I gradually grasped the tips and skills of learning. Finally, I grew from the ESP learning process.

3.4. Observation and reflection from teachers

At the end of each session, the teacher wrote the reflection report (Table 2) to identify the problems and shortcomings of the teaching process. For example, some students continued to maintain passive learning habits, lacked the habit of active inquiry and

rigorous academic attitude, which needed timely reminders and demonstrations. Subsequently, all students positively took a progressive change in learning behavior and exhibited more frequent interaction in class. In addition, the ESP course teacher frequently talked and consulted with other teachers who lectured on Nursing Theory, Nursing Research and Evidence-based Nursing about content arrangement and students progression, thus flexibly adjusting the schedule in order to facilitate the course in a gradually manner and lay a foundation for improving the comprehensive quality of training graduate students.

3.5. Articles writing and publication

To date, four MSN students have published five articles in the journals included by SCI. Furthermore, 51 students have begun to prepare writing English articles.

4. Discussion

There was no precedent for applying the RICH model to the ESP course teaching field of MSN. Cai's study [9] showed that the RICH

Table 2
Excerpts from teacher's reflection.

Date	Reflection excerpts
Oct 21, 2016	Diagnostic evaluation was performed at the first class; the medical words were quite difficult for some students who never learned nursing professional English before, which needs to be considered. Reading various literatures can help memorizing words. Two WeChat public numbers, nursing English and ISPN were recommended to them and help them learning after class.
Nov 9, 2016	Correction of homework to identify some problems as follows, <ul style="list-style-type: none"> • Answer the questions when you ask them since we have discussed the topic • Obvious plagiarism. • The 7th team did not hand in the job. Who gave you the right? • One student had no signature • Measures for the problems: <ul style="list-style-type: none"> • No score for the plagiarism. • To praise the students who finished the job well, including Linda, Alice, Lily, Ada • From then on, students who could not finish the learning sheet seriously need to rewrite. • The homework quality of the group that will give presentation should be better
Oct 10, 2017	Maybe the reading quantity is large. Some of them could not finish 4 articles each time. Next year, 2–3 good-quality articles are probably better for them. Or they will be tired of the learning.
Jan 23, 2018	Perhaps for the later MSN students, we should incorporate different research-design papers to help them be familiar with the writing styles and formats. They could contact various academic research methods in the future.
Jun 21, 2019	After discussing with Dr Du, we agreed that the international Standards of reporting guideline (e.g. STROBE, TREND, PRISMA, SQUIRE) should be discussed in a new class to help students analyze the selected articles and improve further writing.

model had produced a significant learning effect on medical English teaching of TCM medical students of Master's degree education, which was consistent with our study.

4.1. Integrated curriculum design improved academic training

The essence of graduate education is the cultivation of academic research ability, which depends on the unity of research-teaching-learning [14] and the English language as a tool. No national standard has been established for master's nursing academic degrees [15]. The integrated curriculum design as the first element of the RICH model stresses the combination of nursing academics with English basic skills [16]. Accordingly, in the ESP curriculum design, the integration of professional theory-scientific research training for English proficiency is imperative. Furthermore, the special advantage of the RICH model lies in focusing on the course objective rather than being confined to the traditional textbooks. Although the academic objectives and requirements of two training tracts of MSN are quite different, the ESP as a core curriculum incorporated articles with various research designs to help students accumulate professional English vocabulary and specific drills to promote writing. For example, experimental design and case reports are practical writing material for professional degree MSN students. The textbook used in the ESP curriculum of BSN is not suitable for MSN students, and there is no specific textbook for the ESP curriculum of MSN education in China. Undoubtedly, the depth and breadth of learning should be expanded. Therefore, a variety of articles written in English abstracted from the academic journals included in SCI become the best learning materials as the graduate students are meant to read numerous literature for their academic work. The design of the curriculum paradigm obviously has met both sides of learning needs. That is, the integrated curriculum paradigm is beneficial for MSN students to touch upon academic research early and pave the way for the improvement of academic literacy.

4.2. Cooperative learning aroused the awareness of learning autonomy and active participation of MSN students

According to the RICH model originated from constructivism, learners actively explore, find and construct the meaning from what they have learned with the help of teachers and others [7]. As the ESP curriculum linked tightly with the follow-up courses including nursing theory, nursing research method and evidence-based nursing practice, which fitted well with the professional activities and actual needs, all MSN students presented a positive attitude and growing interest in cooperation with teachers and other group members. Teachers were thrilled to witness the students' growth and improvement, which resulted from their active participation in the interaction, preparing the PPT with enthusiasm after class, and repeated revision of learning sheets.

4.3. Curriculum integration posed a great challenge for teachers

The curriculum design based on the RICH model not only promoted the growth of the MSN students, but also posed a great challenge for the ESP teacher as a result of the dual requirement of English skill and professional academics. A series of teaching activities made the teachers exert their utmost effort, including topics selection, reference books recommendation, formulation of learning sheet, being familiar with various nursing theories and the steps of research design methods in advance, checking and screening of articles chosen by each group, pre-test design, organization of discussion, solving problems and correction of homework, teaching reflection and modification after class. In order to

ensure the efficacy of action research, the teachers formed the teaching team to clarify the different priorities of each course. For example, the ESP curriculum played a role in arousing academic research awareness of MSN students by understanding the application of theoretical and conceptual frameworks of research design, but it focused more on the improvement of medical English language ability. During the progress of the action research, it was a big motivation for the teachers to see the growth of the students and their high degree of satisfaction with the curriculum. The teachers thus prepared the lesson more earnestly, which formed a good circle of teaching and learning.

5. Limitation and conclusion

The application of the RICH model to the ESP course of nursing postgraduate students is a new attempt to combine English education theory with postgraduate teaching practice, which provides a new idea for the integration of nursing postgraduate courses. However, the curriculum paradigm is time-consuming and places high demands on both teachers and students. Students' foundation should be fully evaluated and considered before the implementation of teaching, and continuous adjustments should be made. In the future, with the maturity of the ESP paradigm, other evaluative indicators such as critical thinking and core competitiveness of the MSN students can be incorporated to promote the curriculum construction and further generalization.

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Conflicts of interest

None.

CRedit authorship contribution statement

Heng Zhang: Conceptualization, Methodology, Writing - original draft, Writing - review & editing, Project administration, Funding acquisition. **Sheng-Ji Jin:** Supervision, Validation. **Shi-Zheng Du:** Investigation, Visualization.

Appendix A. Supplementary data

Supplementary data to this article can be found online at <https://doi.org/10.1016/j.ijnss.2019.12.001>.

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