

A study of the introductory course to a nautical science major in China

Zhongming Xiao & Wei Li

Dalian Maritime University
Dalian, People's Republic of China

ABSTRACT: An introductory course to a nautical science major should be a professional course for the students of nautical science. At present, in China, some of the undergraduate maritime colleges and universities do not offer such an introductory course at all. As a result many newly enrolled university students only acquire textbook knowledge at university and do not obtain the full professional preparedness for real life issues and challenges. The study outlined in this article is a report of the analysis carried out on the necessity and significance of setting up such an introductory course and proposals put forward for a teaching system that includes the course content, teaching methodology and assessment methods.

INTRODUCTION

Introductory courses at universities are designed to guide freshmen. The freshmen have just completed high school, can be confused about campus life and need to determine the direction for their personal development. It is a great challenge for university teachers to guide them in their university careers, and for them to recognise the relationship of their university career to the outside world. Nautical science is a national engineering major, which was included in the Undergraduate Specialty Catalogue of Higher Institutions issued by the Ministry of Education in China, in 2012. This major involves applied science with a long history and rich content, as well as being strongly practical.

So far, there are 15 undergraduate maritime colleges and universities in China, but only a few of them have set up an introductory course for a nautical science major. The authors have researched the four first-tier undergraduate maritime universities (Dalian Maritime University, Shanghai Maritime University, Wuhan University of Technology and Jimei University); they find only two of them have an introductory course for a nautical science major, viz. Dalian Maritime University and Wuhan University of Technology.

It is, thus, clear that this course has not received much attention. However, the necessity and importance of setting up the course is beyond doubt. The professional introductory course has an important role in guiding university students in cultivating professional interest and planning their own development. It lays a solid foundation for a deep study of a professional course.

ADVANTAGES OF AN INTRODUCTORY NAUTICAL SCIENCE COURSE

Introductory courses provide freshmen with a map, that has clear targets and which enables them to avoid professionally inappropriate detours [1]. Nautical science is a maritime major with international scope that relates to national defence, is covered by legislation, is a competency required by various posts, and is practical. It is unfamiliar to most students, especially, those from inland provinces. If not guided, students may study passively, with unclear objectives and no plan for their college lives.

There have been investigations on introductory courses, which indicated that 99% of freshmen are anxious to set expectations for their college life, which introductory courses are designed to do. However, almost 70% of the graduates who did not have an introductory course were dissatisfied by their learning outcomes, which differed from their expectations [2].

At university, teachers just teach the content of their courses, and few of them guide students in understanding the position and function of the course within the major. This means each course is isolated and there is a lack of a linking

introductory course with other courses. Furthermore, certificates of professional training, such as Basic Safety, Survival Crafts and Rescue Boats, Advanced Firefighting, Medical First Aid, Security Awareness and Seafarers with Designated Security Duties are determined in the second semester.

If the introductory course is run as a senior class, training could be affected and lead to blind study. Therefore, running the introductory course in the first semester can help the students understand the overall programme for their major, as well as promoting interest and establishing a good foundation for future learning.

Before entering university, most students just have an intuitive understanding of their major by name or from a simple introduction. When they arrive at the university, they often cannot adapt to the new learning environment, and become confused, as they are not clear as to their development directions. The objective of the nautical science major is to guide students on setting up the proper learning objectives for their professional careers. The advantages of such a course are as shown below.

Help Students to Understand their Specialty

The freshmen's understanding of their major is usually a superficial one, after they have just entered the university. Students' understanding of the nautical science major is usually obtained from other senior students or instructors, whose unavoidable prejudices could affect the students' interest, e.g. tales of bad employment or the hard life on board ship. As a result, good students may change their major. Some may even drop out of studying altogether.

The introductory course to a nautical science major is usually taught by a professor of the major, who should introduce the major objectively, comprehensively and systematically. Therefore, students' learning goals will become much clearer, which may improve their motivation.

Help Students to Develop a Professional Interest

Albert Einstein once said: *Interest is the best teacher*. Once a person becomes interested in a subject, they will actively seek knowledge of, and explore the subject. This is enjoyable and, therefore, educators must pay close attention to students' interest in a subject. The teacher of an introductory course should inform students of the difficulty of the course and advise good learning approaches and practices. The teacher should also point out the advantages of subsequent employment, including high salaries for seafarers, adventure at sea, and travelling around the world for free. This will encourage students about the future, motivate their learning interest and eliminate the idea that it is satisfactory to just pass the examination. Hence, passive learning is transformed into active learning.

Improve Learning

University education is different from pre-university education. The difference is not only in teaching content, but also in the teaching arrangements and learning and teaching methods. The teaching mode before entering university is instructional, while universities focus is on professional education. All the required knowledge is not taught by teachers; part of it is self-taught. Students may have no class for half a day, and so need to study autonomously and plan their studying themselves.

The courses in a nautical science major are numerous, as are the practical classes. Some are very concentrated and are completed within one week. Students may have difficulty in adapting to this new life without the guidance of professional teachers. *Teaching one to fish is better than giving him fish*, is an old Chinese proverb that resonates across all cultures, i.e. it is more important to teach students how to learn than just instilling knowledge.

Improved Career Planning

For most students, time spent at university is their last bout of education before commencing their careers. The Chinese *Book of Rites*, which has a chapter called the Doctrine of the Mean, and which has been attributed to the grandson of Confucius, is said to show the *usefulness of a golden way to gain perfect virtue*. This *golden mean* claims that *...preparedness ensures success and unpreparedness spells failure*. University education will fail without good career planning. Many students need the guidance of the teachers of the introductory course, so as to understand the future employment situation related to their major. Some students reflect that they should have planned their career when they entered college [3].

SETTING UP AN INTRODUCTORY NAUTICAL SCIENCE MAJOR COURSE

The setting up of an introductory course must reflect the professional characteristics of the discipline and focus on motivating the students' interest in learning. The scholastic year system is implemented in the nautical science major, with basic courses in the second semester and the compulsory introductory course in the first semester; it is a compulsory course lasting seven to nine weeks in total, with classes once a week.

Teaching Content

Using the syllabi for introductory courses at Dalian Maritime University and Wuhan University of Technology, and the objectives of a nautical science major, the teaching content for a proposed introductory course for a nautical science major were determined. Table 1 shows the proposed topics for teaching content.

Table 1: Teaching content of an introductory course for a nautical science major.

No.	Teaching content	Class hours
1	Professional development situation	2
2	Navigation culture	2
3	Professional development programme	2
4	Learning methods	2
5	Maritime conventions, laws and regulations	2
6	Professional training	2
7	Employment	2
8	Seafarers	2
9	Class discussion	2

To expand on the topics included in Table 1, one should consider the following concepts and ideas to be covered:

1. Professional development situation:

The professional development situation covers the concept of nautical science, professional characteristics, past, present and future. The teacher should introduce the differences and relationship between nautical science and related majors, compare developments in nautical science at universities in China and abroad, and provide students with a global perspective.

2. Navigation culture:

The navigation culture concerns the implications of navigation culture in China and abroad, as well as the relationship between navigation culture and nautical science. The teacher should cover nautical histories, as well as significant people and events.

3. Professional development programme:

The content of the professional development programme covers the teaching/learning objectives, curriculum and the basic requirements of nautical science. The teacher should introduce the relationship between the public basic courses, the professional basic courses and other professional courses, as well as the distinction between compulsory courses, restrictive optional courses and free optional courses. Also covered are the credit requirements. Hence, the students have a complete understanding of the university's course programme and requirements.

4. Learning methods:

The learning methods cover the content and methods of both the basic and the professional courses. The teacher should introduce the relationship between basic courses and professional courses, as well compare the learning methods at universities and in high schools, and recommend that students access relevant data online and in the library.

5. Maritime conventions, laws and regulations:

This component covers international maritime conventions, laws and regulations, as well as Chinese laws and regulations. The teacher should introduce the relevant international organisations, and the four maritime conventions (International Convention for the Safety of Life at Sea (SOLAS); International Convention on Standards of Training, Certification and Watchkeeping for Seafarers (STCW); International Convention for the Prevention of Pollution from Ships (MARPOL); and the Maritime Labour Convention). Chinese organisations and their laws and regulations are also introduced.

6. Professional training:

Covered by the professional training are the components and qualification requirements for seafarers' certificates. The teacher should introduce the requirements for holders of seafarers' certificates. Also covered are the theory and evaluation tests for the certificate of competency and the certificate of proficiency for seafarers, as well as the training requirements on ships.

7. Employment:

Discussed in the employment section are the professional employment trends, the prospects and the social demands in nautical science. The teacher is expected to focus on recent trends in employment in nautical science, the working characteristics of each occupation and important shipping companies. This will encourage the students to carry out preliminary career planning.

8. Seafarers:

Described in this section are the crew positions, responsibilities, working characteristics and their sea lives. The teacher is expected to focus on introducing each duty and the characteristics of it, as well as to explain crew life at sea through concrete examples.

9. Class discussion:

The class discussion is arranged as the content of the last lesson. It focuses on professional understanding, university planning and career planning. These mainly are discussed by the students, who should carefully prepare their points in advance. Thus, the students can not only exercise expressive ability with language, but have a communication platform from which to understand other students' thinking.

TEACHING METHODS

The teacher should actively explore teaching methods, as well as preparing the teaching content. The teaching content of a professional course in nautical science is extensive and multifaceted. A project-based approach has been adopted for the course. There are two class hours per project and each is concise, complete and targeted. Various teaching methods are used for different knowledge points, shown below.

Lecture-style Teaching

A lecture transfers information primarily using speech. The teacher may use multimedia courseware, which can include voice, images, cartoons and video to enhance the presentation of the teaching content. For example, the teacher could use a video that deals with professional development. The teaching should be diverse; for example, the teacher could invite senior students to discuss their own learning or invite alumni to give lectures on employment and crew life.

Discussions

In a discussion, students express their opinions on specific points. The teacher should raise interesting and engaging questions; for example, *Why did you choose the nautical science major?* and *What do you want to do after graduation?* Such questions make the students participate actively in the discussion, as well as fostering teamwork and developing communication skills. This promotes students' interest and creative thinking [4].

Guided Self-study

Guided self-study is a method, which encourages the students to preview, review and access relevant information. The class hours of the introductory course are short, while the course content is large. Therefore, the teacher can only cover a part of the material in class, with the rest being covered by the students out of class.

This helps students to develop their independent learning habits. For example, the volume of maritime conventions, laws and regulations is so large that, though the teacher can provide relevant material, the learning of the specific details must be a process of students' out-of-class study.

ASSESSMENT

The curriculum assessment is important in improving teaching quality and determining the efficacy of the teaching. A single, final examination result would not be appropriate for a professional introductory course given the course content. Much of the content is comprised of personal views, with no uniform standard.

The mission of the introductory course to the nautical science major is not to teach part of the major, but to provide broad and long-term professional information. The assessment cannot overlook the process, and so diverse assessment methods and evaluation standards are adopted [5]. The course grade has two components: usual grade and final result.

The usual grade can be for class attendance, regular assignments, answering questions, and so on, and accounts for 20% of the grade. The final result, accounting for the other 80%, could be an open-book examination, essay, etc, which checks the students' professional understanding, learning plans, career plans, and so on. An open-book examination could consist of problems or essay questions, and the paper could be written in a group.

CONCLUSIONS

In conclusion, it is necessary to set up an introductory course to the nautical science major, which has great significance for the students' learning and living in universities, and for their future work. A professional introductory course is a course with important, flexible and constantly changing content.

The teachers should be maritime professionals or experienced, senior teachers. Thus, the teacher has a comprehensive and macroscopic perspective by which to guide the students. The course should help the students understand the nautical science major as early as possible, and lay a solid foundation for the students' career development.

REFERENCES

1. Yang, Y.M., The understanding of setting up professional introductory course. *J. of Jilin Business and Technol. College*, 28, **3**, 110-112 (2012).
2. Yang, J.C., A successful professional introductory course will affect the students' life. *Research in Higher Educ.*, 23, **1**, 38-41 (2007).
3. Gou, C.L., *Leading to Success: College Students' Career Planning and Employment Guidance*. Beijing: Higher Education Press (2009).
4. Yang, X.M. and Li, Q.Y., Teaching reform and experience on professional introductory course. *China Electric Power Educ.*, 189, 62-63 (2011).
5. Sun, Y.H., Teaching exploration of professional introductory course in application-oriented institutions. *J. of Chuzhou*, 12, **2**, 121-122 (2012).