Measures for Strengthening Self-cultivation of Engineering Teachers in Application-oriented Universities

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Abstract. It is significant for engineering teachers in application-oriented universities to strengthen self-cultivation. The measures for strengthening self-cultivation of engineering teachers in application-oriented universities are proposed. It is pointed out that engineering teachers in application-oriented universities should strengthen self-cultivation in many aspects, such as moral cultivation, professional training, teaching ability, teaching and scientific researching quality, humanistic quality, psychological quality and new media literacy, etc.

Introduction

There are a large number of engineering majors in application-oriented universities. These majors bring together a large number of professional teachers. These teachers play a vital role in improving quality of application-oriented undergraduate education. They shoulder the responsibility of designing and shaping the students' soul. Their outlook on world, life and value, their professional level and ways of dealing with people and things will directly affect college students' learning and life style, may affect their value orientation, even their lifelong. Therefore, the engineering teachers in application-oriented universities must have good self-cultivation. This paper focuses on the measures for strengthening self-cultivation of engineering teachers in application-oriented universities.

Methods of Strengthening Self-cultivation

Raising Moral Cultivation

The following aspects should be achieved to strengthen moral cultivation of engineering teachers in application-oriented universities. At first, we must love education. Only if we truly love education, the "noblest profession under the sun", can we devote ourselves wholeheartedly, persistently and unremittingly to the day-to-day, monotonous and arduous work of education and teaching, without feeling tired or burnout. Secondly, we must love our students. Some teachers regard students as parts to be processed and do not want to communicate with them. The purpose of attending class is to complete the task. Some teachers regard students as the source of life, and vulgarly shout out the slogan "Students are God". In fact, these people do not love students truly. True love for students should be like parents treating their children, out of nature and without expressing, neither indifferent nor indulgent, both tolerant and guiding. Thirdly, we should improve political level and moral sentiment. On major issues, we must stand firm and never waver; on key issues, we must stick to the bottom line and be unambiguous. In addition, we should integrate theoretical study with practical action. In daily life, we should convey our outlook on world, life and value to students through natural behavior[1, 2, 3].

Strengthening Professional Training

As the saying goes, the teacher has to have a bucket of water to give students a bowl of water. With the rapid development of modern information technology, the information sources of students are extensive, and they know more and more knowledge. In this context, it is not enough even if teachers have a bucket of water or a tank of water. They must enrich themselves with a continuous
stream of living water, so that they become inexhaustible tap water. So the engineering teachers in application-oriented university must strengthen their professional theoretical training, insist on learning, keep pace with the times, guide students with the most advanced knowledge.

Unlike research-oriented universities, the goal of application-oriented universities is to cultivate high-level applied talents with comprehensive and coordinated development of knowledge, ability and quality, who will be in the first line of production, construction, management and service. Facing application directly is the essential characteristic of application-oriented universities, especially in engineering major. In order to cultivate students' ability to solve practical problems, teachers themselves must be able to carry out practical operations, to solve practical problems, and then to teach students. Therefore, the teachers must go to the laboratory to do experiment and discover the possible problems in the experiment, carry out the practical operation training in the training room to improve the proficiency and make the training guidance more handy, take part in labor in the enterprises, workshops and production lines, integrate theory with practice, and then bring the actual problems back to the classroom as a vivid example of teaching activities. Only by repeated training can they gradually improve their professional practice training.

**Increasing Teaching Ability**

The working place of engineering teachers in application-oriented universities is mainly classroom and laboratory. In order to work successfully, teachers should deeply understand the professional personnel training program, carefully prepare each lesson according to the syllabus, prepare teaching plans, lectures and courseware. They should pay attention to social concerns, collect the actual teaching cases, and apply the selected cases to classroom teaching. They should study skill and art of classroom teaching with clear speech, moderate speech speed, and more humor. The writing on the blackboard should be neat, clear and typeset reasonably, fully reflecting the supplementary function of blackboard writing to the multimedia teaching method. They should study the methods of classroom management, pay attention to the first three rows, the last three rows and the four corners of the classroom, control the students' attendance rate and classroom order, and adopt different methods to activate the classroom atmosphere. They should constantly improve teaching methods, arouse students' learning enthusiasm and stimulate students' interest in learning. They should treat all students fairly, and let every student feel the teacher's concern for him. They should strictly control the order of the laboratory, so that each student put their energy into the experiment, let the students who have completed the experiment ahead of time help those students who temporarily encounter difficulties, encourage students to work together and make progress together.

**Enhancing Teaching and Scientific Researching Quality**

With the development of society and the progress of science and technology, great changes have taken place in the teaching methods of higher education. The traditional teaching methods, such as cramming education, are not suitable for the modern university classroom. For engineering majors in application-oriented universities, individualized teaching modes, such as resource-based thematic teaching mode, project-based teaching mode, problem-based teaching mode, WebQuest teaching mode, network-based cooperative learning mode, case-based learning mode, situational teaching mode, concept map-based teaching mode, e-portfolio based teaching mode and multiple intelligences based teaching mode, continue to appear. The teaching methods, such as task-driven, integration of theory and practice, flipping classroom, inquiry and discussion, emerge in endlessly. The teaching means, such as MOOC and CAI, are in the ascendancy. As engineering teachers in application-oriented universities, they must learn advanced teaching concepts in time, conduct teaching research, explore and summarize a set of teaching mode, teaching method and teaching means suitable for application-oriented engineering majors. In addition, to broaden horizons and reach a higher level, they should participate in teaching and research activities, such as subject construction, major construction, curriculum construction, textbook construction, faculty building, etc.
The engineering teachers in application-oriented universities must do some scientific research to improve their professional level. They could apply for general projects of natural science funds at school level and provincial level, and participate in key projects of natural science funds at provincial level or projects of natural science funds at national level. They could cooperate with enterprises to apply for horizontal research topics to solve practical problems encountered in the production process. The new masters and doctors could cooperate with their supervisors, and study in depth the topics studied in their master's or doctoral dissertations. Senior teachers should lead young teachers to tackle key scientific and technological problems together, impart their own scientific research experience to young teachers, and absorb new ideas and new technologies of young teachers. All teachers should learn from each other and make progress together. They could turn scientific research achievements into teaching contents through appropriate ways and means, let students feel the connotation of scientific research. They could select outstanding students to join their research team, and stimulate students' interest in inquiry and innovative thinking through practical cases.

**Heightening Humanistic Quality**

For teachers, it is not enough to master knowledge of the subject only, but must dabble in knowledge of relevant fields too. A thorough grasp of the classical research results in the subject and related fields is a prerequisite for teaching to reach a certain depth. A wide range of learning from the latest research results in the subject and related fields is a necessary requirement for teaching to reach a certain extent. Without rich humanities knowledge, teaching cannot achieve certain depth or breadth.

The teaching of each subject has its own characteristics, and needs the guidance of scientific methods. Therefore, teachers should have a deep grasp of the subject knowledge as well as the support of pedagogy and psychology. Only in this way can they form their own teaching style and constantly improve teaching ability.

The typical symbol of humanistic quality is humanistic spirit. Humanistic spirit generally refers to the understanding, grasping and caring for dignity, value and meaning of human existence. Exploring the meaning of life and realizing the value of life is the inherent requirement of humanistic quality. What is the meaning of life? This is not only a research topic for philosophers, but also a proposition for everyone to think about. Teachers in universities should regard teaching as a platform to explore the meaning and value of life. In the process of teaching, they should be people-oriented, communicate with students with an equal and open mind, convey a positive attitude to students, guide students to establish a positive outlook on life and value[^4].

**Improving Psychological Quality**

From the perspective of external factors, teachers' psychological quality can be improved through policies and management. However, the fundamental way for teachers to improve their psychological quality is to mold healthy psychological quality through self-learning and self-psychological adjustment. First of all, loving education is the premise for teachers to improve their psychological quality. Sincere love for education is not only the expression of teachers' good psychological quality, but also an important educational force. Secondly, sharpening willpower and shaping personality is the basic way for teachers to improve their psychological quality. Teaching is a kind of spiritual expenditure. The characteristic of teachers' labor is long cycle and slow effect. It is impossible to succeed without perseverance and good character. Teachers' willpower and personality directly affect the formation of students' willpower and personality. Teachers exert influence on students through certain educational content, educational methods, as well as teachers' personality, words and behaviors. Therefore, teachers should consciously hone their willpower, correct bad personality and improve their own psychology quality. Thirdly, paying attention to mental health and self-regulation are effective methods to improve teachers' psychological quality. The teachers always feel tremendous mental pressure under heavy burden of education and teaching, unprecedented social demands and competitive pressures. The teachers generally have irritability, depression, tension, anxiety and other negative emotions. If they cannot adjust themselves, they
may experience emotional instability or even out of control. Fourthly, improving self-cultivation and seeking perfect personality is teachers' unremitting pursuit to improve psychological quality. Through self-study and self-improvement, teachers internalize social norms into a kind of self-requirement. Through self-cultivation, teachers enrich their life and experience, cultivate their taste, broaden and deepen their cultural connotations, and become a modern man with civilized accomplishment, love of nature, and love of life. Finally, learning psychological knowledge and mastering psychological work skills are the necessary requirements for teachers to improve their psychological quality. Teachers must be able to control their own emotions, but also be able to timely identify and solve the problems encountered by students. So teachers should consciously study psychology, understand the psychological characteristics of young people, let students accept themselves, and become experts in student work.

**Advancing New Media Literacy**

The university teachers undertake not only teaching work but scientific research task as well. Their demand for information is becoming more and more urgent. At first, in the era of big data, data information is pervasive in all aspects of society, and the university teachers must have a keen sense of information in order to accurately capture complete and valuable information. Secondly, with the rapid development of the internet, IOT, cloud computing and big data, the amount of data to be processed is increasing, so the traditional data processing technology cannot solve difficult problems in reality. In order to solve these problems, we must break through the traditional data processing technology, carry out technological changes according to the characteristics of big data, research and develop new technologies. Therefore, the university teachers must constantly learn new information technology in order to adapt to the requirements of the big data era. Thirdly, in the era of big data, because of the huge volume, various categories and low value density, people must have a strong information ability to find the information they need from the rapidly changing massive information. In addition, in the era of big data, data information is full of human living space and people's information behavior is extremely common. People might violate the relevant laws and regulations because of carelessness. Therefore, the university teachers must have good information ethics, abide by laws and regulations related to information, and ensure that their information behavior does not endanger national interests and social stability, nor infringe upon the legitimate rights and interests of others[^5,^6].

**Summary**

In China, application-oriented undergraduate education accounts for a large proportion in higher education. Application-oriented undergraduate education has played a positive role in meeting the needs of economic society for high-level practical personnel, in developing economy and society, and in promoting the popularization of higher education. There are a large number of engineering majors in application-oriented universities. These majors bring together a large number of professional teachers. These teachers play a vital role in improving quality of application-oriented undergraduate education. Therefore, it is important for engineering teachers in application-oriented universities to strengthen self-cultivation. The engineering teachers should keep up with the pace of times. They must keep on studying and practicing in order to improve their professional ability and comprehensive quality. For this reason, we propose the measures for strengthening self-cultivation of engineering teachers in application-oriented universities. We think that engineering teachers in application-oriented universities should strengthen self-cultivation in many aspects, such as moral cultivation, professional training, teaching ability, teaching and scientific researching quality, humanistic quality, psychological quality and new media literacy, etc.

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