

Classroom Teaching ‘Indiscipline’ and Academic Research ‘Forbidden Zones’

Analysis on Dependence of University Engineering Classroom Teaching and Academic Research

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Abstract—With the deepening research of teaching, college teaching as an unique academic activity has become the focus among educators. How to effectively integrate classroom teaching and academic research is the key in university engineering teaching. This paper analyzes and elaborates the effective integration of classroom teaching and academic research from the perspectives of the pertinence, quality and difference of class teaching.

Keywords- classroom teaching; academic research; pertinence; quality; differences

I. INTRODUCTION

As teachers, they must know what is education and how can they teach, and solve the puzzles in the course of teaching so as to realize the teaching targets and achieve successful results. While seeking for the creativeness among complex teaching, teachers have to consider the features of education. As university and college teachers, how can they carry out effective education so as to realize the fundamental goal of education and effectively complete teaching tasks as well as realize teaching goals?

Both professor Zhong Qiquan[1] and Dole [2] have commented on the model and regime of current teaching. The narcissistic classic music performance or industrial teaching talked by Zhong Qiquan or tourists in the sightseeing bus told by Dole criticize an extreme deficiency of current teaching mode, which is the most significant problem in university and college education reform. Besides, the traditional engineering teaching mode has been tested by a glittering array of teachers and summarized based on their experience, which is beckoned as effective. Teachers take this teaching mode as an outline with circuit and product analysis to carry out theoretical analysis and experiment design, which can highlight the point and combine various aspects with experiments, integrating the theoretical explanation and practice. However, this kind of teaching is a technical implementation, which separates from creative activities besides teaching targets. In addition, it greatly limits students' imagination, ignores the performance of students in classroom, shields the assumption desire and indirectly confines their practical ability. SATO [3] once pointed out in Curriculum and Teacher that teaching practice is cognitive, cultural, practical, social, political and ethic and that is to say, if teachers still stick to traditional teaching

mode yet neglecting practical knowledge they cannot meet the requirement of the above elaboration. Concerning this matter, the academic research and class teaching model reform are studied. Furthermore, how to effectively integrate classroom teaching and academic research is the key to improve the classroom teaching quality and this paper comes up with various opinions concerning this point.

II. PERTINENCE OF CLASSROOM TEACHING

The pertinence of classroom teaching refers to the condition that when teachers introducing academic research in classroom teaching, they should adopt cutting edge hotspots in selecting contents and in the course of explaining especially in the research filed with single research objects. Concerning their professional quality, they have to deeply explore the cutting edge hotspots in the academic field and adopt certain theory or application case so as to elaborate its merits as well as merits to stimulate students' learning desire and professional field imagination by combining technical analysis. The university classroom teaching aims to talk about the academy and communication. Therefore, it should have free space for academic discussion so as to create a place for new thoughts. Obviously, it does not mean that all classroom teaching should integrate academic research without limits. Concerning different objects and targets, the integration policy for academic research and classroom teaching should be carefully deliberated.

Judging from objects, they refer to various university and college students and their cultivation should be the focus in education reform which urges most of the schools to add the ratio of practice in engineering teaching. In theoretical teaching, they should also encourage professional teachers to seek for proper teaching mode and approach which will improve students' professional quality. At present, university and colleges in China are receiving millions of engineering students and they have different professional qualities, abilities to accept new things and different thinking conditions.

Judging from the teaching targets, the overall teaching target in engineering teaching is to cultivate professional quality. That is to say, in classroom teaching, teachers do not only have to teach new knowledge, discuss academic problems with students and cultivate their innovation ability but also pay attention to introduce cutting edge

hotspots as well as various academic ideas to them so as to have analysis and evaluation which are beneficial to their professional development. That is to say, teachers should try unremitting efforts to directly or indirectly stimulate students and enhance their practical ability. At present, under the general guidance, the engineering departments in universities and colleges have set different development trends with different teaching tasks.

We can see that emphasizing the pertinence of classroom teaching is an indispensable part while talking about effective integration of classroom teaching and academic research. Judging from the perspective of education, every course offered by school should aim to cultivate their professional skills and good morality. Besides, how to effectively improve the pertinence and effectiveness and determine the condition of teaching targets should be the focus. As engineering teachers, they have to pay attention to each sector of the classroom activities after understanding the teaching positioning and introduce academic research as well as cutting edge hotspots based on classroom teaching targets. In these sectors, the contents shine out because academic introduction serves the teaching, which directly affects their practical ability. For example, in amplifying circuit teaching of Basic Analog Electronics, teachers can combine the example in Fig. 1 and the application case of Fig. 2-the finger pulse wave measuring device to carry out analysis. This teaching mode shall create different effect comparing to only adopting the basic principle in Fig. 1. The introduction of targeted academic introduction will help to help students understand the theory of abstract knowledge and improve their practical ability.

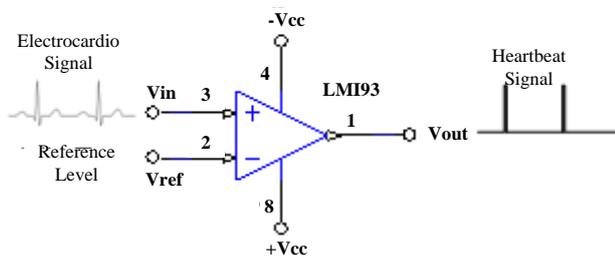


Figure 1. Comparison amplifier-Obtain heartbeat pulse signal

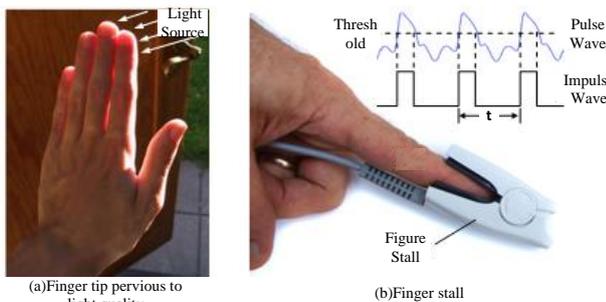


Figure 2. Operational amplifier-Finger pulse wave measuring device

While introducing academic ideas, teachers should also add appropriate and innovative interpretation in order to make sure that students have profound understanding toward the academic idea and technical realization to finally get the optimum approach and application value. The innovative interpretation can be beckoned as the transformation of teaching targets and results but not the

ultimate goal, and it is the only way to make success. As engineering university and college teachers, they should not only focus on the hotspots to cultivate and stimulate students' innovative thinking ability but also hold the correct recognition, namely to cultivate students to implement self-analysis and evaluation via teaching practice. Only in this way, can teachers have the optimum combination of classroom teaching and academic research so as to obtain the original target of teaching. Undoubtedly, once teachers break through the pertinence, they enter into the forbidden zone.

III. QUALITY OF CLASSROOM TEACHING

Gilbert Ryle [4] gave the definition of quality in The Concept of Mind. He believes that so-called quality refers to physical health, quality and literacy. Therefore, concerning the quality of classroom teaching, it refers to a certain practical intelligence which urges to develop the quality development of teaching objects while facing uncertain teaching environment.

The teaching quality is a must because the teaching practice field is complicated. Obviously, the class teaching quality is demonstrated by teachers' behaviors, which are closely related to the approaches they adopted in classroom teaching. In engineering teaching, the differences of students as well as burst events will bring troubles for teachers which are related to the complexity of classroom teaching. For example, when teachers consciously introduce the academic cutting edge hotspots as well as the research results as the breakthrough point combining theory and practice and students feel puzzled. Then students put forward uncertain opinions. At this point of time, how can students instantly make creative activities so as to answer and help students resolve the confusion to please them and stimulate their learning interests is very important to complete teaching task. Besides, the introduction of academic ideas is not only knowledge impartment, understanding and mastering but also the communication between students and teachers. When teachers have prepared well, they shall have creative activities even if there should be unexpected accidents and won't be panic. So, we can see that, in university and college engineering teaching, the teaching quality is determined by the teaching contents and sectors. The richer the teaching content is, the wider space students have to improve their quality, otherwise, even if teachers are equipped with abundant knowledge, they are not able to have creative activities and it will be easy for them to enter into the forbidden zone without optimum teaching effect.

IV. DIFFERENCES OF CLASSROOM TEACHING

The connotation of classroom teaching difference can be analyzed and elaborated from the perspectives of teacher quality and student development so as to explore the difference of engineering teaching activities. Firstly, analyze the connotation of classroom teaching from the perspective of teacher quality: teachers should be professional with abundant knowledge; besides, they have to be familiar with the cutting edge hotspots as well as the differences; moreover, they should possess differences in terms of pedagogy and psychology; finally, they should possess language differences. Secondly, analyze the

connotation of classroom teaching from the perspective of student development: to begin with, the teaching objectives are difference; besides, the teaching targets and student performances are different. To conclude, the prerequisite to improve the teaching quality is to focus on the quality differences and student development differences to properly introduce academic research.

The teacher quality is a key factor for successful integration of classroom teaching and academic research which means that the teacher quality difference will directly affect the classroom teaching effect. As university or college engineering teachers, if they are confined to textbooks, and echo what the books say, reminding to be a qualified driver in sightseeing bus to ensure the safety of tourists yet neglecting the enjoyment of beautiful sceneries, they shall not obtain ideal effect. For the same reason, students shall be tired of single California noodles and become conflicting, which is not only shown in emotion but also showing in the loss of learning drive. Make textbooks as a drop of water in your ocean of knowledge has a deep metaphorical meaning in terms of teacher quality. For students studying engineering in common universities and colleges, it is very important to introduce the cutting edge hotspots for teachers to weaken students' learning desire, develop their perspective of natural science as well as creative thinking ability, create a dynamic environment to help students have a full understanding and explore their talents. Meanwhile, pedagogy and psychology quality also becomes necessary conditions for successful integration of classroom teaching and academic research. Concerning the relation between pedagogy and psychology, Su Huomu Lynskey said that if pedagogy is the factory manufacturing complicated devices, then psychology must be the most complicated machine and if there is no machine or is unsophisticated machine, the factory can be beckoned as vacant which emphasize the necessity of teachers' pedagogy and psychology quality. Based on this, the language quality of teachers also becomes a necessary condition to successfully integrate academic research and classroom teaching which mainly show in the influence of classroom teaching. The language quality of teachers does not only determine the information transmissibility but also the effect to stimulate students' interest to improve the mental efficiency. The creative power of language is to describe the bored characters and formulas as dynamic pictures so as to help them better understand abstract knowledge.

The student development condition is essential for successful integration of classroom teaching and academic research. In current university and college classrooms teaching contexts, teachers ignore the differences of individual students, differences in three development phases yet pay attention to holistic thinking mode again and again. Therefore, we can see that student development difference and teaching difference as well as the effective integration of classroom teaching and academic research are put forward. Concerning differentiated teaching, some people think that it is derived from individualized teaching yet actually it is not. The implementation of differentiated teaching is double-sided because we don't clearly know the meaning of difference and unification. Judging from the perspective of the differences among teaching objects,

we have to ensure the compatibility of teaching targets and learning targets as well as the compatibility of the ultimate of teaching activities and teaching targets. In classroom teaching, teachers should adopt differentiated teaching, and at this time we are talking about that the teaching target is to improve the common development. What is difference? The differentiated problem of teaching objects will bring along with different ultimate teaching targets and the teaching activities, which should take teaching target expansion and adjustment into consideration. At the same time, teachers should adopt diversified teaching approach, lead the individual development of students which are beneficial to form unique thinking ability and are in accordance with the basic responsibility of giving consideration to both common and individual development. Therefore, while facing the differences in classroom teaching, the key is to properly introduce academic research and excessive introduction will lead them to the forbidden zones which cannot have expected result.

V. CONCLUSIONS

Concerning three essential characteristics in classroom teaching, the target for teachers is to properly introduce academic research in classroom teaching, implement the teaching philosophy of scientific development. For this issue, lots of researchers have paid much attention to the content. Similar research could be found in Refs.[5-10].

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