

# *Exploration Teaching Method of "Communication Engineering" Technical Talents*

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**Abstract**—Aiming at our institutions of higher learning in training applied talents existing "culture results" in the case of enterprise "needs" does not match the proposed "three · three" teaching method (three: social needs, personal preferences, school orientation; tripartite: "analog current network", "MIMPS teaching method", "school-enterprise mixed team of teachers"), so that students not only to obtain the corresponding theoretical knowledge, along with quick access to the enterprise after graduation bear the actual work of art ability; students achieve training that meets the market demand for applied talents; also in line with the needs of the student's own career, making social, personal, school tripartite win.

**Keywords**—*Communication Engineering, Applied talents, current analog network, MIMPS Approach*

## I. IDEAS OF PEDAGOGY EXPLORATION

In the current Communication Engineering College personnel training and employment needs of businesses that do not match, according to explore how the "social demand", "Students interested in" Shanghai Motor Academy "technical school legislation, application-oriented" training policy, make full use of Our school and ZTE cooperation in the construction of the existing network simulation training base, drawing on excellent telecommunications companies - ZTE personnel skills training experience and proven professional skills evaluation system, the implementation of joint projects covering basic skills and professional communication skills MIMPS Approach cooperation on applied technical personnel training. So that students learn during the school:

➤ While fully master professional theory knowledge, master in advance according to the enterprise engineering and technical personnel training of practical skills training ways;

➤ To make the students not only have the knowledge framework of sustainable development, and have immediately after graduation into the enterprise technical ability to undertake the actual jobs;

➤ Have both communication engineering program planning, communication engineering experiment design, selection of communication engineering products self and communication engineering environment comprehensive ability in aspects of self-configuration and commissioning;

➤ Let students clearly understand all aspects of communication equipment; reduce the time of the students from theory to practice;

➤ Help students adapt to communication the technical requirements of the enterprise, from the consciousness of engineering practice, exercise into scientific research and engineering practice of good courage, and quickly integrate into the communication industry.

In a word, this teaching method is improving the students' communication ability, organization ability, expression ability, unity and mutual assistance, the collective sense of honor, confidence and courage, etc., for the purpose set out; Actively guide is complementary to teacher, the students' active participation in teaching concept to design, eventually to improve students' comprehensive quality. [1][2]

## II. TEACHING DESIGN

Mr. CAI yuanpei said. "Education is to help people by education he can develop my ability." For higher education, and cultivate social needs, meet the students' personalized development of education is the education of the people. [3][7]

### A. *With "three" as a guide for the development of the Curriculum Groups*

(Social, student individual, adhere to the "three schools as a whole) as the guidance, to keep pace with The Times of training mode into their daily teaching activity, on the premise of to follow the law of development of higher technical education, pay close attention to the change of the social needs, schools, enterprises and social advantages all over the world, both the cultivation of innovative quality, timely adjusting and optimizing curriculum group, through the depth of cooperation between colleges and to cultivate the students' practical, innovative, able to innovate, can quickly adapt to the society, to integrate, competent for construction of new country of high-level applied talents.

TABLE I. CURRICULUM GROUP

	No.	Professional direction	Main courses (including class lab)
Theory Course	1	Communication technology	Communication theory, digital signal processing, mobile communications, optical fiber communication, Converged communications technology, communications engineering and information exchange technology Mobile communication services and technologies, the theoretical basis of the communication network
	2	Electronic circuit analysis of information technology	Electronic circuits, digital circuits and logic design Communications Electronics, Principles and Applications, Embedded Systems and Application
	3	Computer and network technology	University computer network technology based on high-level language programming, JAVA programming Computer Software Technology, Computer Communication Networks
Engineering Training	1	Communication technology	professional practice, graduation thesis The fourth generation of mobile communications Engineering Practice, Third Generation Mobile Communication Engineering Practice, fiber-optic communications Engineering Practice, Practice and Training converged communications engineering, communications engineering design and implementation of comprehensive

*B. Design of targeted educational content*

Traditional communication textbooks pay more attention to the integrity and continuity theory; abstractly is not intuitive. Getting students often feel difficult, difficult to understand and apply. Such materials rigorous theoretical system, comprehensive, but for the students after unattractive, students may study full section content, it is difficult to imagine that those communications devices (such as switches) in the telecommunications room is how it works, or does not fully understand and grasp the basic principles of communications equipment and applications, cannot grasp the practical application of basic skills manipulate them.

MIMPS teaching materials ZTE fully reflect the company's application of theoretical knowledge and mutual integration features, also has a strong appeal to students, but because of the learning time is limited, so students targeted selection MIMPS materials is a must.

*C. Effectively guide students to develop career planning*

Reference information for market research on a regular basis, the social demand, set on a regular basis with the relevant functional departments, enterprises, research institutes, industry contacts, organized a "student career planning expert team". Reference to the talent Evaluation System (NC - HR Evaluation System) and S.M.A.R.T career planning education System, as shown in view of the students' qualities and professional orientation, effectively guide the students to develop career planning.

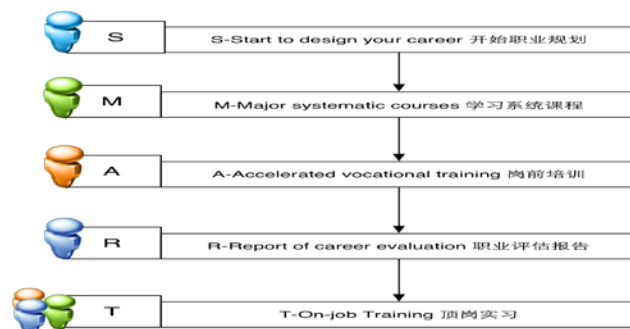


Fig. 1. S.M.A.R.T Career Education System

*D. Approach to introducing enterprise MIMPS*

*1) MIMPS meaning*

MIMPS are: modular (Modularization)/layered-interleaving (Interlacement)/task-driven (Mission-driven) / self-evaluation (Self-evaluation) five letters of the abbreviation.

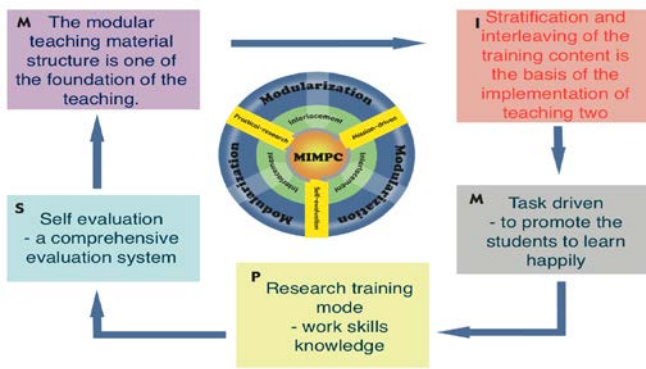


Fig. 2. MIMPS model diagram

"M" requires the use of materials for task partitioning, the formation of modular teaching organizational form. "I" require the theory in practice, on the training content to ability ladder divide the training unit, lets the student in practice gradually improve practical skills.

"M" said the second task drove to create similar jobs learning environment for students. "P" said research practice, change the dominant teaching mode thoroughly, lets the student in the role of task driving, and oneself start work to find the answer, to resolve the problem. Eventually the situation of the students learning can be achieved by a unified management evaluation system software, this is the "S" [3][4]

2) MIMPS Teaching content

a) "M" "I" - the task of modular teaching materials and training content

MIMPS teaching methods to develop student's skills as the core highlight the "mission modules" significance.

"Task module" is extracted in the actual case work, universal, representative and instructive case. By "task module" Let fragmented knowledge to re-integrate the organic form is completed by the simple to the difficult overall framework. "Mission modules" into "mission" and "sub-tasks."

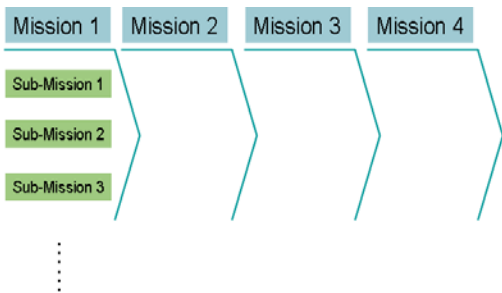


Fig. 3. Division of tasks

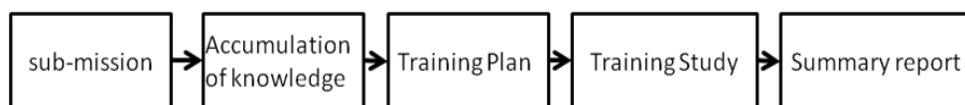


Fig. 4. Practical Study flows chart

b) Hierarchical - interleaving tissue training content (Interlacement).

Stratification is the ability to claim training is successive layers of relationships. Deep knowledge module is interwoven, from less to more intertwine in the practical training.

c) "M" "P" "S" - "career simulation" teaching process

"M", "P", "S" is the implementation of MIMPS teaching three big magic weapons. Use "M", "P", "S" for students to create a parallel to the actual work of learning environment, lets the student in the work process of learning knowledge and experience. Help students to understand the professional related industry. Enhance the professional quality. "M" task driven (Mission - driven) by assigning tasks for students to understand the form of responsibility; "P" research training (Practical research learning through group discussion, the teacher guides the way to let the students learning has become the dominant, active thinking, the answer to the problem. Self-assessment (Self - evaluation) through the evaluation point penetrating each course, each task, and even each subtask, all-the-way tracking students' learning situation, able to timely response state of students' learning, correctly grasp the direction of the efforts to help students and teachers.

d) Task-driven (Mission-driven)

MIMPS teaching task driven approach is put forward, it is composed of qualified teacher's responsibility to existing industry made a careful investigation, the formation of strong practicability, teaching purpose of teaching methods. MIMPS have task driven teaching guide data sets, through which can guide teachers use task driven.

e) Training mode (Practical-research)

Practical aspects of the implementation of the teaching are the key link exchanges and training taught in the curriculum design class ratio is about 1: 1. Practical aspects of the use of experts (teachers) Reviews guide.

Firstly, the training study group (group number for the standard 4--8 people) to discuss and develop a training program-training plan. The crew completed the practical aspects of cooperation in the experimental platform; submit training report (written documents and record actions screen).

NOTE: After a general task Mission completed, the groups form through lectures, selected the best team skills, to give incentives. Students can practice process design, planning ability, ability to cooperate and ability to explain. To improve skills at the same time improve the personality, the purpose of the formation of professional quality.

*f) Self-evaluation (Self-evaluation)*

Students are learning the subject, the students 'learning attitude, study habits, learning initiative directly affect the ultimate effect of teaching, if teachers focus on students' focus only on the period, end nodes and some time, you can only see the learning As a result, we can't see the students learning process; on the other hand, if the teacher is merely monitoring or fundamentally change the students' sense of self-correcting fundamentally, the effect is not ideal.

Students learn how to make a timely reflection, self-evaluation, correcting bad habits?

MIPS pedagogy NC adopted a "self-training evaluation system", the evaluation system is based on the enterprise 360° evaluation system, a full assessment of the information system through the professional software design formation.

Collect evaluation data covering all aspects of MIMPS Approach implementation.

It includes two parts: the level of knowledge and quality levels.

Assessment includes self-assessment within the group peer assessment, group leader reviews, comprehensive evaluation of teachers; all aspects of the formation of a multi-level 360° evaluation system; emphasis on student self-assessment evaluation. Teachers in the teaching process are no longer imparting knowledge, Narrator, but mentors, consultants; students are no longer passive recipients, but the initiative to acquire. This evaluation system can promptly tell your students about their understanding and awareness of others to you so that students learn to evaluate themselves.

*E. Comprehensive Training*

*1) Vocational qualification certificate, win at the starting line*

Cooperation with enterprises, students receive learning enterprise qualification certificate issued by the NC (ZTE vocational qualification certificate), as shown, to obtain priority career opportunities.

*2) Help students develop career development plans*

According to students' individual situation, assigned by the company's professional planners to help students develop effective career planning can be implemented. For example, if a student has the potential salesperson, and willing to work in sales, you can achieve your career dreams along the following path.



Fig. 5. Career path

*3) Enable the students to have a certain degree of technical reserves, to meet the needs of rapid technological development.*

Some cutting-edge training opportunities provided by the present teaching methods, such as TD-LTE (4G mobile communications), NGN (unified communications), NGB (the future of video technology), training and other fixed-line IMS technology, we will be willing to engage all emerging student communication technology to lay a good foundation of knowledge and technology.[6][7]

III. GOAL ACHIEVEMENT

➤ The enterprise culture of MIMPS pedagogy to meet the "three · three" demand for advanced applied talents;

➤ IT nurture students to become ICT industry (information), CT (communication) system integration and engineering application talent;

➤ Construction based on the industrial application of ZTE product innovation base;

➤ By university-enterprise cooperation to carry out the all-round training for teachers to assist professional, academic and teaching building a high level, has a wealth of practical experience, understanding communication technology development, ICT industry demand, competition ability, reasonable knowledge structure of engineering applied faculty;

➤ Integration of enterprise resources, realize the enterprise participation in the whole process of the process of professional education and management, engineering training for students to provide long-term, stable business support.[7]

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