

Committee IV
Crises in Education in the 1980's:
A Survey of Educational Values and Systems

draft
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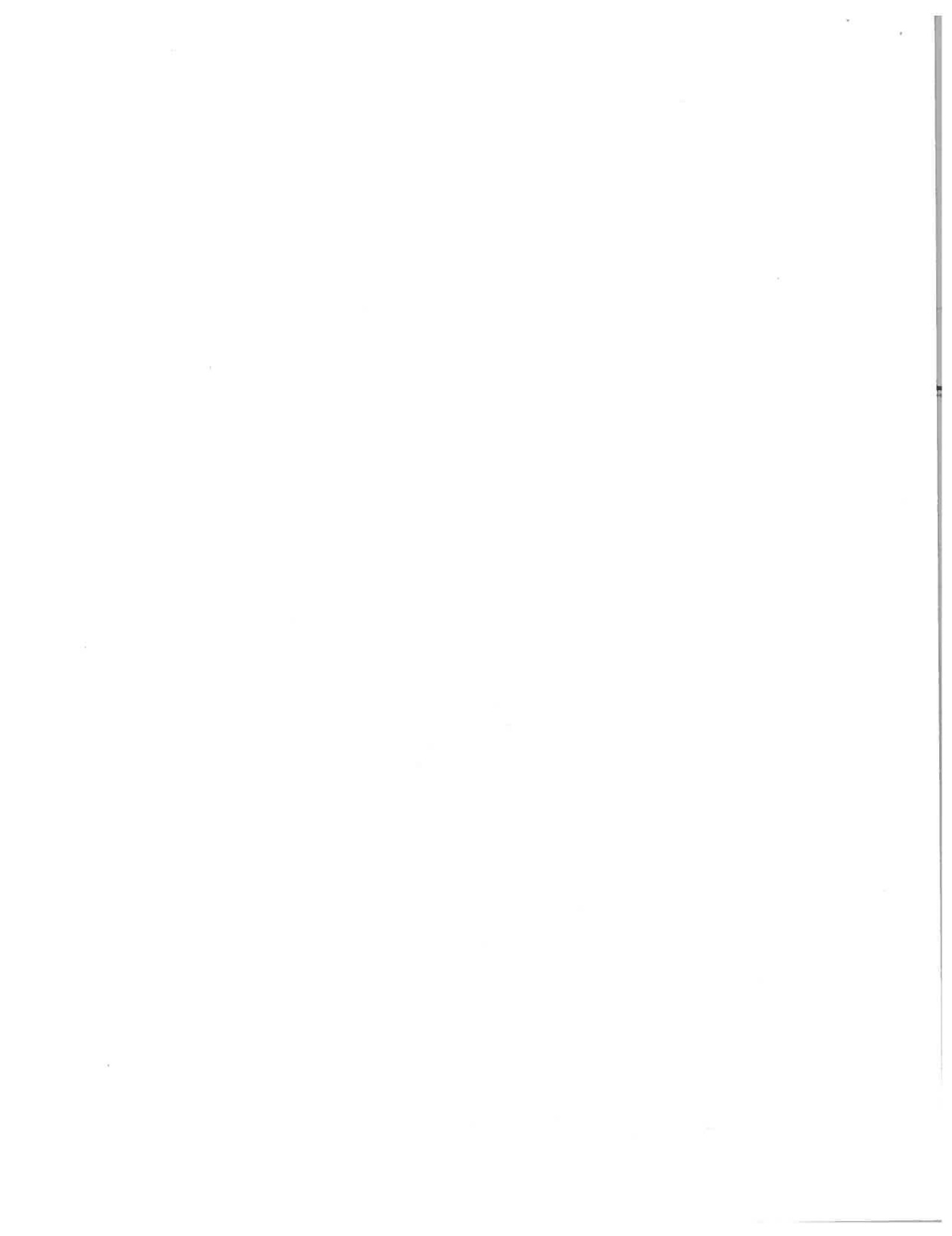
REFORM IN SECONDARY SCHOOL EDUCATION IN ZHEJIANG PROVINCE
AND THE IMPORTANCE OF POLYTECHINICAL SCHOOL EDUCATION

by

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The Thirteenth International Conference on the Unity of the Sciences
Washington, D.C. September 2-5, 1984

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Faced with the rapid growing world economy and the scientific technique that is forging ahead and bringing about changes day after day, we ask ourselves what kind of qualified personnel we need and how we shall develop our education to suit and fulfil the tasks that our age entrusts us? These are questions that challenge every educational worker. I am not able to give a very comprehensive account of everything here but I'd like to take this chance to say something briefly about the problems existing in the secondary education in Zhejiang Province. These are my personal views and ideas, which are ready to be discussed with all of you on this occasion.

A) Some facts in Zhejiang Province and the Requirement of Qualified Personnel:

1) Zhejiang Province, covering an area of 100,000 (one hundred thousand) square kilometers, is lying along the east coast of China. With a mild climate, it offers very rich resources and natural advantages in agricultural production. Though the cultivated area makes up only 18% of the whole land, the multiple index is high about three harvests in one year. The grain yield is high (one of the toppest in China); rapeseed yield amounts to 1/9 of the national total output; that of bluish dogbane and jute is 1/7; that of silk-worm cocoons is 1/4, the province produces 1/6 the output value of oranges and tangerines out of the whole nation, 1/4 tea (1/3 of the exported tea), 1/4 commodity bamboos.

It's no wonder that Zhejiang province plays a very important

in the field of national agriculture. About 70% of the land in this province is mountain areas. But due to its full exploitation and the policy of "suit measures to the local conditions" and energetic fostering of the native products and mountainous industrial crop, agriculture in our province has achieved better results on the basis of diversified economy and the allround development of farming, forestry, animal husbandary, sideline production and fishery.

Thus the province supplies large amounts of raw materials for the development of processing products for light industry, food industry and farming by-products.

2) Zhejiang Province has got a vast sea area and numerous bays. Besides the world-famous ZhouShan Fishery, there are other six inshore waters systems. The sea space covers an area of 22.3 thousand square meters which equals 2.2 times that of land. In addition, the quite spacious shallow sea which is good for cultivation, and 100,000 hectare of shallow waters provide adequate young kelp and laver. And Zhejiang Province is also advantageous in the field of freshwater fish-farming.

3) Light industry, textile industry and handicrafts in Zhejiang Province have very solid foundation. The output of light industry has made up 70% of the output value of the whole province. Not only the textile industry, food industry and handicrafts have developed rapidly, many traditional products with a long history, enjoy a reputation and are world-famous. Such as silk in Hangzhou, Jiaxing

and Huzhou; rice wine in Shaoxing; ham in Jinhua, swords and celadon in Longquan; stone carving in Qingtian and wood carving in Dongyang. Besides, new trials are constantly blazed in many of the light industry products and their quality has been increased daily. In order to accelerate the speed of developing industry, a considerable investment of 5.5 billion yuan has been made in the capital construction. The completed projects amount to the number of 3,500. This has played an important part in the development of the provincial national economy. Since the implementation of the "Cities lead counties" economic system, the collective enterprises grow fast. The 176 small townships and counties, in addition to the nine cities, are the economic centers of the countryside. The value of their products makes up 43.1% in the gross product. Such seaports as Ningbo, Wenzhou and ZhouShan will be opened for foreign trade, which will greatly enhance the foreign trade between our province and foreign countries and promote other construction projects. Through these, we can find out about and study the new trends in world technique, education and culture. All this is significant in improving our economy, education and other work in our province.

And what is more important to be mentioned here is that there have been remarkable changes in the two fields in the countryside since the responsibility system was carried. One is that industry in townships and counties grows with oncoming force. Up to now, there are nearly 80,000 enterprises with the big employment of 2.6 million that makes up 16% of the agricultural population. Their gross product was more than 8 billion and it will amount to 10

billion this year so they will become one very important force in our provincial economy. The second thing is that the rapid development of specialization and socialization in agricultural production and the fast increase of commodity rate in farming by products need urgently developing processing industry.

4) Zhejiang Province enjoys exceptional advantages of natural gifts of beauty. Hangzhou, the capital city of the Province, is not only the center of politics, economy and culture of the province but a city noted for its picturesque scenery all over the world and for a history of long standing. Surrounding the West Lake are a number of scenic spots which attract the mass of tourists both abroad and at home. There has long been the old saying "Above there is the Heavenly Paradise but Hangzhou and Suzhou are the earthly paradises." Besides the tourist center of Hangzhou, Zhejiang Province is dotted with many other places of historic interests and scenic beauty. Such as the Qiantong River the "Thousand Islets Lake" the Yaolin Wonderland etc..

Although our province is relatively weak in heavy industry and energy resources, our main conditions are good.

To bring our advantages into full play to enable our economy develop, the key point is to have various kinds of qualified personnel of technique and management. But now we have some visible problems in this respect. For example, only 0.47% of the total population with university education, 5.2% of the total population with senior high school education (including polytechnic

school education). The two together constitute 5.67% of the population. This shows that there are few people with university or senior school education background. If we look at the structure of the workers on the job, we will find the same is the case. Among all the workers, labourers in the fields of farming, forestry, animal husbandry, side line production and fishery workers, of production, transportation, commerce and service and of other fields amount to 95.4%, only 4.57% people are involved in professional and technical work.

In the factories owned by the Nation most workers and staff need further training.

Every branch needs to solve the problem of lacking qualified personnel for the purpose of developing its undertaking. Take the polytechnic personnel for an example: 10,000 polytechnic school graduates will be needed in 1990 in the textile profession which is characteristic of our Province, but only 2,000 are estimated to be replenished. That meets the needs of one fifth of the number. Again for instance, in the largest-scaled agriculture and forestry system, polytechnic personnel are planned to be 28,000 in 1990, only 3,000 can be offered according to the present training ability. That is to say only 1/10 of the number needed can be fulfilled. Electronics industry is kind of newly developed industry in our province which will need 10,000 polytechnic personnel among which 3,400 are for, but only 400 can be provided. Travell service and foreign trade need a considerable number of people according to the plan, travel service will receive foreign quests (and overseas Chinese) numbering 370 thousand. If one

interpreter is needed for 500 guests and one tourist guide for one thousand, it will totally amount to 620 interpreters and guides. If one bed needs 0.8 worker (equals the level of a polytechnic graduate), 10,000 are required according to the prospective plan in the next few years. With the daily increasing need in foreign trade after Ningbo and Wenzhou are opened to outside world, 2500 personnel are to be required in the foreign trade. But up to the present, our Province is not able to meet the need because there is no such school to train the personnel. Township and county industry has an urgent need for the replenishment of technical force and they voice the great demand for large numbers of technical workers. Workers on the job lack sufficient knowledge and skill and the structure is unreasonable. 80-90% of them have very low educational level. In Xiaoshan County, there are 314 enterprises with 140,000 workers and staff. But in the factories, technical force is weak with very few technicians trained from special professional schools. Only 63 people have an education background of university or polytechnic school (including those who have been in colleges for some years) making up 5/10,000 of the workers and staff. The yearly gross production in Shaoxing County industry is nearly one billion yuan ranking the top in the Province. It has a construction force of 40,000 working all over the country. But in this army of construction there is no one technician who has received formal and regular training.

With the development of commodities, professional families and individuals urgently demand some guidance in scientific

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knowledge and technique to compete in markets. They consider qualified personnel as "the God of Wealth". Some of the farmers spend a lot of money engaging someone as advisors; some spare no money, sending their children to colleges or polytechnic schools for further study. All this shows: First, all and different branches and fields need qualified personnel; Second: the speed to train qualified personnel of various kinds and levels must be accelerated otherwise it will delay or lose chances.

B) The Existing Status of secondary school Education in Zhejiang Province --- the Urgency in Developing secondary Vocational Education

In 1983, there were 584 full secondary schools with both junior and senior high schools. In addition to this, there were 37 senior high schools and 2540 junior high schools. The total number of students at school was 1,975,598 students senior high school; 1,351,522 (junior); Teachers totalled 13,288 (senior) and 65,756 (junior).

Out of the present junior high school graduates (350,000 in 1983) about 27% continue their education in senior high schools and only 17% senior school graduates will enter universities. So most high school graduates will take up an occupation instead.

The structure of secondary education ought to be a 'pagoda-shaped" system with many levels, many ranges and various kinds.

The development of vocational education should be given much attention to before the graduates get jobs.

The requirement of qualified personnel is in many ways and it needs the proper proportion of qualified personnel of different levels so that the social beneficial results can be brought about. The concepts that only those personnel of high levels, e.g. university graduates, are what we need are wrong. A nation, while attaching importance to higher education, should pay much attention to secondary vocational education as well. In fact what is much needed in the society at present time is those personnel of secondary and primary education background. Although high education in Zhejiang province needs to be developed in a big stride also.

In Zhejiang, there are already 34 universities and colleges (including 5 to be constructed) with 162 specialities and 44,700 students. In the recent two years, the yearly enrollment averaged 14,000 (the number will be 23,000).

Over the past few years, Zhejiang Province, as well as other places in China, has made a rapid stride in secondary vocational education. There are 112 ordinary full-time secondary vocational schools, among which 29 are teachers colleges, 19 engineering schools, 9 agronomic schools, schools of forestry, 2 schools of aquatic, 20 medical and pharmaceutical schools, 14 schools of finance and economics, 7 schools of political science and law, 3 schools of arts, 2 comprehensive schools and one school of gymnasiums, broadcast and television, cinema, meteorology, industry and commercial administration, and management each. 150 specialities are offered in these schools where 3100 teachers are working and 36,000 students are studying. There are 141 technical and engineering schools with the teachers numbering 1253 and the students 12,000.

Senior vocational schools of different kinds amount to 149, among which 50 are city-run schools of agronomy and aquatic; 16 vocational schools run by townships and counties; 83 country vocational schools plus 141 vocational classes attached to ordinary schools. More than 100 specialities are offered, and 500 fulltime teachers and 48,000 students at school. The students involved in the above mentioned three schools totals 96,000, making up 30% of the total number of students in ordinary senior high schools. Though this has begun to change the monostructure in secondary education, still there is a longway to go, particularly the quantity and quality of vocational technic education can not come into line with the development of national economy and keep pace with the requirement of industry and agriculture.

1) There is a smaller number of students at secondary vocational schools; this is particularly obvious in full-time secondary professional ones--they are the main components of secondary vocational and technic schools. This results in the lack of replenishment of qualified personnel of secondary technicians in many enterprises. In the composition of the technic rank, the proportion between high-levelled professionals and intermediate professionals is imbalanced -- 1:0.675 is abnormal. The problems are even more serious in some of the branches. For instance, among the engineering technicians, those who graduated from univetsities or colleges for professional training make up 64.7% while those with a polytechnic school education background make up only 27.6%.

But at present it is still a common acknowledgement that university education attracts more attention while secondary education is overlooked. Some people, without taking into consideration their own conditions, persist in turning polytechnic schools into institutions of higher education; some put undue emphasis on the need of highlevelled personnel in their plans. All this shows the want of a complete and correct understanding of the role that secondary technic education plays. The composition of technical rank of an enterprise must not be made with monosystem but with a rational system, otherwise the high-levelled professionals, who are not many, have to do all the work that the secondary-levelled professional personnel should accomplish. Using more capable people for trivial tasks is a waste of talent, and it will destroy the rational organization of intelligent people and finally reduce the productivity. It will even give rise to accidents and the impossibility of formation of productive forces. In fact, the combination of high technical equipment with productive forces of high quality and the integration of intermediate or low technical equipment with productive forces of fairly high or low level will save and make full use of productive forces and means of production.

2) The quality of workers and staff in townships and counties is not good enough, which reduces production and lessen economical profit due to the small enrollment of students to technical and engineering schools in the past few years and the unreformed system of inviting applications for jobs at that time, many enterprises gave public notice of vacancies to be filled. Quite a few people

who graduated from ordinary secondary schools or who had awaited jobs got into factories and became workers. They had never been trained professionally, they were not skilled and worked with low efficiency. Up till now, many enterprises remain low-levelled in education technique and management and they lack professionals. Apart from this, 80-90% of the students from ordinary schools who fail to enter university can not adapt themselves to the new work because they have not been trained for it what is more, they have to be retrained at the expenses of the government. It is not worthwhile at all from the viewpoint of economic. That accounts for the reason that we are sparing no effort to undertake the prime issue -- the reform in the structure of secondary education.

3) The country economy develops so rapidly while its vocational education is making a slow progress with weak technic capability. Among all the agricultural technic personnel in the whole country, those who have received regular and formal training are numbering less than 400,000, making up only 4/10,000 of the agricultural population. And the ratio in our Province is even lower than that -- it's about 3/10,000. In some of the schools of agronomy and forestry, parts of the curriculum are not meeting the needs of the present all round development of economy in the country, and some of the students who are not keeping their minds on farming work have left no means untried to be transferred to other jobs.

It is naturally resonable to strenghten the secondary technical forces and enlarge the proportion between intedmedaite technicians and technical workers. Many measures should be adopted to solve this

problem. A rational handling by the educational and planning departments or the proportional development of institutions of higher education and secondary technical schools is of great importance as well.

The question of developing secondary vocational education has been brought to attention and the idea has been very well received by all circles.

C) Measure Adopted in the Development of Secondary Vocational Education in Zhejiang Province

What we have realized from the practice over the past few years is that the development of vocational and technic education should center on the purpose of serving national economic construction. To achieve this, an educational worker should, first of all, find out what the economic construction is like in this Province and what the future trend will be so that professional technic education can make better contributions to the development of economy, in our Province.

According to the above-mentioned future trends in economy and society in the Province and the urgent demand of qualified technic personnel, a prospective plan is made as following:

Technical secondary schools enroll 15,000 students in 1984 and it is hoped that they will enroll 24,000-25,000 in 1990;

Vocational senior secondary schools has an enrollment of 28,000 students in 1984 and are to have 46,000 in 1990;

Technical Schools enroll 6,500 pupils in 1984 and will be able to have 12,500 in 1990;

All these three will total a number of 83,500 yearly in 1990 when the ordinary senior high schools will have a yearly enrollment of 80,000 pupils. Thus the ratio between the enrollment of professional secondary schools and that of ordinary senior high schools will be 1:1. The yearly enrollment of technical secondary schools will amount to 45,000 the number of which will be close to the enrollment of universities and colleges--nearly 2:1. With the constant improving of economy and finance in our Province, it is hoped that the ratio between the students in technical secondary schools and those in schools of higher education will be 3:1 in the year of 2000.

To accomplish this plan that the yearly enrollment will be 83,5000 pupils in vocational and technical secondary schools, the following measures must be adopted: Expand the existing technical secondary schools so that each schools can enroll 600 pupil on the average. If some schools which will be built are included, there will be 130 technical secondary schools in 1990. The plan that every school can enroll 200 yearly will be fulfilled. Set up county-run vocational secondary schools, schools of agronomic technique or county-run schools of industry, totalling about 250. In addition to all these, there are ten vocational schools run by departments under the Central Government and the State Council and Provincial departments. The three being added together, there are 300 vocational senior high schools of different kinds. While improving their teaching quality, technical and engineering schools should increase economic efficiency, expand the enrollment to be able to admit 100 pupils to enter the schools each year.

In the light of the economic characteristics and advantages in Zhejiang and in order to enable vocational and technical education to advance steadily, what is needed at present is to improve such teaching conditions for vocational education as the problem of teachers, teaching materials and teaching facilities. But besides this, more stress should be given to solving problems referring to some other fields.

1) A regulation should be made to change the present status quo--turn "get a job first, get trained later" into "get trained prior to getting a job".

2) A leading group, composed of people in charge of planning, labour force and education and the departments, should be established under a united leadership to make a practical plan on the basis of the needs of economic programs of cities and counties and the needs of people's daily life. In this way vocational and technical education could be carried out in a planned and proportional way and the number of students at those schools could be increased by a big margin. This is what Hangzhou and Ningbo are doing now. The students at vocational schools in these two cities make up 30% of all the students at senior high schools. The reform in the structure of secondary education in Hangzhou started in 1979 when there were only 4 or 5 vocational classes with 5 or 6 specialties in two ordinary senior high schools. There was not any defined objective or plan for the number of students to be enrolled or the curriculum to be offered at that time and a long-term rational program was out of the question. Upon graduation, many students

were found not to be geared to the needs of the job. Even if they were employed, they could not play their part. This caused the "four dissatisfactions" of the schools, the students' parents, the students themselves and the employers, hindered the further transformation of the structure of the secondary education and finally led to the decline of the enrollment that year. In recent years, they countering these drawbacks, ask first of all industrial branches to find out the demand of qualified personnel in the near future or during the National 7th Five year Plan and then give the plan to the Municipal Vocational Secondary Education Program Office composed of Program committee, Labour Bureau, Bureau of Finance and Bureau of Education. By summing up the demand of industrial branches and the practical facts of the secondary education, the Program Committee will put forward a general proposal including the number of vocational schools to be rebuilt or those to be newly set up and the number of enrollment. In order to accomplish the plan that very year, the Program Committee must determine what specialities are to be offered according to the characteristics of that certain school; it also helps the nearby industrial departments contact the schools. Therefore both of them know what kind of and how many students and technical personnel they need and they have trained. From this year on, industrial departments begin to draw contracts with schools for personnel. The objective of training, the length of schooling, specialities, the number of students, funds and work place after graduation have been written down on paper. That's why vocational education in Hangzhou have been advancing steadily in recent years, 95% graduates are employed to be geared

to the needs of their jobs. But the development is not balanced in the whole Province. Particularly some places are not carrying out the reform in a planned way, great efforts should be made.

For the number of student at vocational school Zhejiang Province has planned to reach the percentage of 50% of the total number of senior high school graduates. In order to achieve this goal, the Provincial Government requires government of all levels to make a reliable and rational plan for the development by through consideration and overall arrangement on the basis of the practical conditions of their localities and on the basis of the correct handling of the relations between demand and possibilities, present and long-term, projects overall situation and local situation, key schools and general schools and quantity and quality etc.

3) Handle correctly the relations between higher education and secondary professional education to devote major efforts to developing secondary education at present time.

Secondary education is one important component in the educational system as mentioned before and is closely linked with the four modernizations of our country. The facts have shown that it takes shorter cycle and less money to train secondary technical personnel and personnel of management, who have some due theory knowledge and fairly good operating ability. These people are called the "bridge" between workers and engineers and the intermediate link because they are able workers with the gift of the bag since they know some theory, and they are ready to accept a higher or a lower post or different jobs without putting on airs. Every front of endeavour and all branches welcome them.

Judging from the structure of different levels, we think secondary professional education must develop even more rapidly than higher education, but the number of enrolled students in polytechnic schools every year is almost the same as that in universities and colleges. This is not a normal proportion. So it is a major problem to be studied and solved in our province to speed up the development of secondary professional education and increase its capability of enrollment.

4) Set up some new type of polytechnic school to let the graduates to go to the countryside, to the factories of collective ownership and to the enterprises run by townships and counties. Support them to run at their own funds some new-typed polytechnic schools to be fitted to the needs of township-and county-run enterprises. The State is not responsible to assign work for the graduates, the schools should recommend them and the enterprises will choose from the best to employ. Xiaoshan County, for example, has collected an amount of funds of 2.4 million to run the first township-and-county-run industrial school in our Province. And it begins to recruit students this year. A batch of schools like this will be set up soon.

5) Try to set up within five years some schools centering on developing such specialities as tourism, food industry, light and textile industry, electronic industry, instrument and meter industry, building materials industry and foreign trade to fill the gaps in these fields.

To meet the developing of secondary technical education, Ningbo has divided a part of urban district into "an area for culture and education"; Hangzhou also marked a certain place along the southern bank of the scenic Qiantang River as the "second area for culture and education," where department from the State Council and foreign friends are welcome to run schools and they will receive preferential treatment.

6) Seek diversified ways to solve the fund problem for professional and technical education. Secondary vocational education needs more money which comes to more than 5 or 6 times as much as that for ordinary schools. So if the number of enrollment is increased, there must be a big increase in funds too. The State will supply part of the funds, but other kinds of resources should be explored to guarantee funds for running schools. Carry out the principles of employing both ordinary education and vocational and technical education; employing fulltime schools, work-study schools and night schools and employing State-run school and schools run by professional departments so as to bring into full play the forces of the local governments, educational departments, factories, mines and enterprises, township-and-county industry, the masses and all circles. Create conditions for running schools by using various forms (jointly run, self-run and transformed schools) and by adopting many ways to collect qualified personnel, money and materials. This is the way township— county run industrial schools in Xiaoshan County solved the problem of

funds. It offers 4/5 of the funds for setting up schools and for daily use while the Province only provided 600,000 yuan as grant-in-aid. Some schools with fairly good foundation are requested to tap the latent power and they may be entrusted by other departments, local enterprises and institutions to draw contracts and be provided with funds by the units that will employ their graduates. They may also conduct several short-term courses and begin the service of scientific and technical consultation. Meanwhile they may for trial implementation, take some training fee from the units that will employ their graduates. All the income gained in this way is used, according to the State's regulations, mainly to develop school's construction. Moreover, we advocate day students who will be charged for tuition by reforming the past system that the State took too much financial responsibility for the students. At the same time the way stipend has been used must be improved and scholarship should be practised step by step.

In short, vocational and technical education in our Province did not make an early start, but its great vitality has manifested itself and it has become very popular. Though there lie many difficulties on the way to advance. We still firmly believe that under the leadership of the Government and with the support of all the field concerned, it will develop healthily and more successfully with more experience so as to make greater contribution to promote economy in our Province.

