# Research on Current Situation and Developing Strategies of Continuing Education in Chinese Hi-tech Parks

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## Abstract

This article is a part of the outcome of the subject "Research on Strategies and Policies for the Reform and Development of Continuing Education" organized and implemented by the Chinese Ministry of Education. Through a sample survey on 53 hi-tech parks in China, the researches used the sample statistics to outline the current situation of continuing education carried out by hi-tech parks, including types, forms, funding sources and inputs, the management system and operational mechanism and so on. SPSS statistical software was used for data analysis. The variable correlation analysis explore the deep-seated factors of the impact of continue education in high-tech parks, and its role in the structural adjustment of Human Resources and economic development of hi-tech parks. On this basis, the prominent problems of carrying out continuing education in hi-tech parks, such as the internal management system, construction of teaching ranks, funding, the contradictions between working and studying, were further analyzed. Learning from the successful experience of carrying out continuing education in developed countries in Europe and America, the researchers came out with corresponding countermeasures for the next step in developing continuing education of high-tech parks in China.

In 2008, the Ministry of Education, PRC, carried out a research project on "Research on Strategies and Policies for the Reform and Development of Continuing Education ". Huazhong University of Science and Technology was in charge of one of the research topics--- "Research on Current Situation and Developing Strategies of Continuing Education in Chinese Hi-tech Parks ". Based on the actual development of 53 national high-tech parks (hereinafter referred to as High-tech Zone), we selected Zhongguan Cun in Beijing, Zhangjiang High Technology Park in Shanghai, Wuhan East Lake New Technology Development Zone and the other 14 science parks as research subjects. Through survey and analysis, a comprehensive understanding of the current situation and existing problems of carrying out continuing education in high-tech zones in China was gained and relative policies and countermeasures were suggested.

## Current Situation of Continuing Education in Chinese Hi-tech Parks

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### Major Types

The types of continuing education in High-tech zones in China include degree education and non-degree education. The degree education contains online education, adult education (full-time, correspondence, evening college), and self-study education and other forms of education. Non-degree education can be divided into internal training, college training, social organizations training, abroad (outside) training in accordance with the training institutions.

Table 1 Types of Degree Education for Employees in High-tech Zones (2003-2007)

| Year | Total number | Correspondence | Evening college | Full-time | Self-study | Online |
|---|---|---|---|---|---|---|
| 2003 | 362532 | 108332 | 71156 | 65248 | 91269 | 26527 |
| 2004 | 495721 | 143347 | 89461 | 120179 | 97096 | 45638 |
| 2005 | 678535 | 199670 | 93953 | 197255 | 106948 | 80709 |

| | | | | | | |
|---|---|---|---|---|---|---|
| 2006 | 828422 | 210001 | 72910 | 297637 | 135141 | 112733 |
| 2007 | 870957 | 328813 | 65535 | 234673 | 99432 | 142504 |

Can be seen from Table 1, among the employees in Chinese high-tech zones who participated in the study of degree education, the number of employees who participated in correspondence education (including evening college) and online education has increased year by year. The correspondence education (including TV education) is the main form of continuing education among the staff in High-tech zones. The numbers in evening college, full-time education and self-study education have reached their peaks around 2005 and 2006 and then decreased.

Workers in High-tech Zones choose the forms of further education according to individual needs, the characteristics of the education and tuition fees, the regulation of state education policies and so on. In-service learning and leisure studies are the main demand of employees in high-tech zones. Correspondence education, due to its flexible schedule, relatively low fees, long history, high social recognition, attracted almost 40% of employees. Online education, due to its flexible schedule, rich learning resource, advanced learning tools, was chosen by more than 16% of employees though it did not have a long history. Close to 30% of employees chose to study full-time. The number shows full-time education is still quite attractive to the employees. The reduction of numbers in full-time education and self-study is mainly due to the influence of regulations of the State education policies.

Table 2 Types of Non-Degree Education for Employees in High-tech Zones (2003-2007)

| Year | Total number | Internal | College | Social organizations | Abroad |
|---|---|---|---|---|---|
| 2003 | 438518 | 126619 | 204855 | 76129 | 30915 |
| 2004 | 603805 | 187491 | 268271 | 103855 | 44188 |
| 2005 | 823960 | 278836 | 335018 | 139674 | 70432 |
| 2006 | 983297 | 359522 | 378786 | 159450 | 85539 |
| 2007 | 1011053 | 308298 | 338166 | 201201 | 163388 |

From Table 2, it can be seen that the non-degree education and training in High-tech zones have maintained good momentum in recent years. The number of trainees increased from 438,518 in 2003 to 1,011,053 in 2007, an increase of 128%. Of which college training takes up the largest share but the proportion shows a year-on-year downward trend. The internal training accounts for a large percentage and maintains a steady development. Social organizations training and abroad (outside) training develop faster, showing a rising trend.

## Focus on Carrying out Continuing Education in High-tech Zones

**Organizations and Institutions**

Table 3 Situation of Centralized Management of Continuing Education in High-tech Zones

| Management settings | High-tech Zones | Enterprises |
|---|---|---|
| Centralized Management | 94.10% | 70.60% |
| Non-Centralized Management | 5.90% | 29.40% |

Table 3 tells that the vast majority of high-tech zones and enterprise managers value much on the development of continuing education. However, compared to the high-tech zones, enterprises put less attention.

**Financing**

Table 4 Financing of Continuing Education in High-tech Zones (2003-2007)

| Year | Total amount | From High-tech Zones | Raised by enterprises | Raised by employees |
|---|---|---|---|---|
| 2003 | 2601.79 | 76.00 | 1989.73 | 250.28 |
| 2004 | 3053.01 | 96.90 | 2366.11 | 290.03 |
| 2005 | 3604.12 | 126.10 | 2782.68 | 403.64 |
| 2006 | 4852.52 | 149.40 | 4020.96 | 480.53 |
| 2007 | 6477.19 | 212.70 | 5022.40 | 717.91 |

Table 4 shows that funds for continuing education in enterprises investigated have increased year by year from 2003 to 2007. Funds from enterprises consist of the largest share. Take the data in 2007 as an example, funds from high-tech zones take up 3.3% of the total.

**Tuition Aids or Reimbursement**

Table 5 Tuition Aids or Reimbursement for Continuing Education in High-tech Zones

| Tuition Aids or Reimbursement | High-tech Zones | Enterprises |
|---|---|---|
| Yes | 82.4% | 48.23% |
| No | 17.6% | 51.77% |

Table 6 Tuition Aids or Reimbursement for Continuing Education in High-tech Zones

| Funding Level | Percentage |
|---|---|
| Junior College | 7.4% |
| Bachelor | 18.5% |
| Master | 44.4% |
| PhD | 29.6% |

From Table 5, Table 6, we can see that 82.4 percent of high-tech zones, 48.23% of the enterprises have financial aids or reimbursement. Funds for the master's degree or higher education takes up 74%, which suggests that the parks support employees to promote their academic qualifications, especially support employees with master's degree or higher education to continue their study.

**Attitude**

Table 7 Attitude of Enterprises in High-tech Zones toward Employees' Continuing Education

| Attitude | Degree Continuing Education | | Non-degree Continuing Education | |
|---|---|---|---|---|
| | Number of people | Percentage | Number of people | Percentage |
| Very Supportive | 421 | 25.1% | 341 | 20.3% |
| Supportive | 766 | 45.6% | 893 | 53.2% |
| Not Supportive | 136 | 8.1% | 76 | 4.5% |
| Unclear | 355 | 21.2% | 368 | 21.9% |

As suggested in Table 7, the majority of enterprises quite support employees to receive continuing education. Enterprises with very supportive attitude take up 25.1% (degree education) and 20.3% (non-degree education). Enterprises with supportive attitude account for 45.6% (degree education) and 53.2 % (non-degree education). At the same time, the data shows that enterprises support non-degree education more than degree education.

Table 8 Supportive Policies for Continuing Education

| Policies | Degree Education | Non-degree Education |
|---|---|---|
| Paid Study | 12.8% | 15.7% |
| Tuition Aids | 11.6% | 14.1% |
| Time Guarantee | 18.1% | 24.2% |
| Promotion & Pay Increase | 18.0% | 13.5% |
| Unpaid Study | 8.3% | 6.8% |
| No Tuition Aids | 14.4% | 9.7% |
| No Time Guarantee | 9.5% | 7.4% |
| No Promotion or Pay Increase | 7.4% | 8.6% |

Table 8 suggests that policies on continuing education vary tremendously from company to company. Supportive policies favor non-degree education more than degree education.

**Motivation**

Table 9 Employees' Motivation to Pursue Continuing Education

| Motivation | Degree Education | | Non-degree Education | |
|---|---|---|---|---|
| | Number of People | Percentage | Number of People | Percentage |
| Promotion & Pay Increase | 238 | 15.1% | 324 | 14.5% |
| Skills Requirement | 434 | 27.5% | 818 | 36.6% |
| Overall Quality Enhancement | 824 | 52.3% | 1026 | 45.9% |
| Others | 81 | 5.1% | 68 | 3.0% |

Table 9 tells that the main reasons for employees to pursue continuing education is to enhance personal qualities and upgrade personal skills, together accounting for 79.8% (degree education) and 82.5% (non-degree education).

**Assessment of Effects and Impacts**

Chart 1 Relation among the economic development of High-tech Zones, Position Structure and Degree Structure

Chart 1 suggests that the total revenue of individual High-tech Zone is positively correlated with numbers of employees with position titles in the High-tech zones. The relation indicates that the improvement of employees' qualities promotes the economic development of the parks.

Table 11 Types of Degree Continuing Education Best Suited for Employees in High-tech Zones

| Types | Online | Correspondence | Evening college | Self-study | Full-time | Others |
|---|---|---|---|---|---|---|
| Parks | 52.9% | 35.3% | 11.8% | - | - | - |
| Enterprises | 32.35% | 31.37% | 13.24% | 18.63% | 3.43% | 0.98% |
| Employees | 27.8% | 19.8% | 14.1% | 11.4% | 26.9% | - |

Table 11 tells that online education gains the highest reputations among the management of high-tech zones, enterprises managers and employees. The result indicates that online education, as a new born education form, has developed rapidly in recent years. With its flexible approach to learning, advanced learning tools, and rich learning resources, the online education wins the favor of society. The high-tech zone management's preference for online education is quite evident. At the same time, the management of high-tech zones and enterprises managers are more agreeable to the form of part-time learning. This suggests that on-job learning and study in spared time are important ways of solving contradiction between work and study. In addition, the high-tech zone management, enterprises managers, and employees hold different opinions on full-time education.

## Trends

**The Most Requested Types of Continuing Education**

Table 13 Survey on the Most Requested Types of Continuing Education in High-tech Zones

| Types | Amateur Correspondence/ Evening college | Full-time | Self-study | Online | Training | Post-graduate course |
|---|---|---|---|---|---|---|
| High-tech Zones | 23.5% | - | 5.9% | 41.2% | 23.5% | 5.9% |
| Enterprises | 20.6% | 0.5% | 12.7% | 20.6% | 41.2% | 4.4% |
| | | | | | | |

Table 13 suggests that enterprises have stronger demand for non-degree education and training which takes effects quicker and more practical. The role of online education has gained consensus between the management of high-tech zones and enterprises managers. It has greater potential for future development. Amateur Adult Education (correspondence / evening college) still maintains a vigorous vitality. The dominant position of full-time education and self-study is gradually being lost, especially the full-time adult education is on a very clear trend of shrinking. Compared data among the Amateur Adult Education (correspondence / evening college), full-time adult education and self-study education, it is clear that the contradiction between work and study is not only the main issue of carrying out continuing education in High-tech zones, but also the principal contradiction constraining the further development of the latter two educations. The management of High-tech zones and enterprises managers prefer to learn in spared time and in-service learning. The proportions of post-graduate course in the high-tech zones and the enterprises level are very close to each other. They both consist of a small share which indicates that over a period of time continuing education in High-tech zones will focus on low-level degree education and practical training

**Types of Employees Who Need Continuing Education Most**

ble 14 Survey on Types of Employees Who Need Continuing Education Most

| Types | Party Administration Manager | Business Manager | Professionals and technicians | Skilled operators |
|---|---|---|---|---|
| High-tech Zones | 5.9% | 29.4% | 47.1% | 17.6% |
| Enterprises | 0.5% | 29.4% | 54.4% | 15.7% |

Table 14 indicates that in the survey on types of employees who need continuing education most in the high-tech zones, high-tech zone management and enterprise managers share a strong convergence of views. The professional and technical personnel need to carry out continuing education very much, accounting for over a half. This reflects a distinctive feature of the continuing education in high-tech zones: as the development of science and technology, high-tech zones, as the concentration of high-tech, are under greater pressure and higher frequency of the scientific and technological innovation and technological upgrading than other regions. As a result, with the primary purpose of updating knowledge, relative employees' demands for continuing education become stronger. The high proportion among business managers highlights the importance of business management among modern enterprises, which explains the continuous rise of management level the rise of modern is the drive for enterprises' development.

**Existing Problems**

Table 12 Survey on Existing Problems of Continuing Education

| Major Problems | High-tech Zones | Enterprises |
|---|---|---|
| Internal Management | 7.7% | 13.8% |
| Teachers | 12.8% | 14.3% |
| Construction of Training Institutions | 38.5% | 22.5% |
| Funding | 20.5% | 22.8% |
| Contradiction between Work and Study | 20.5% | 26.7% |

Table 12 suggests that the main problems for high-tech zones and enterprises to carry out continuing education are construction of training institutions, funding, and the contradiction between work and study. Among them, the training institution building is the prominent problem which High-tech zones face. Contradiction between work and study is the prominent problem for enterprises.

Through visits and discussions, we found that in addition to the specific issues related to the above surveys, the following problems of carrying out continuing education in high-tech zones still exist.

Inappropriate management system and operational mechanism
Supply and demand cannot be balanced
Funding constraints
The quality of education needs to be improved

## Countermeasures and Suggestions

Bring continuing education into long run development planning
Establish a diversified continuing education system with enterprises as the mainstay
Establish and improve the evaluation system of continuing education
Promote reform and innovation in continuing education
Build multi-input channels, including government financial support, for investment in continuing education step by step

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