

# **A RESEARCH ON THE EDUCATIONAL FACILITIES IN THE COUNTIES OF NORTHWEST CHINA BASED ON THE INTEGRATION OF URBAN AND RURAL AREAS - A CASE STUDY ON THE CHENGCHENG COUNTY, SHAANXI PROVINCE<sup>1</sup>**

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**ABSTRACT:** The thesis, finds out the essential problems in educational facility construction of the county by investigation and analysis on current status of educational facilities in the county of Chengcheng, Shaanxi province, located in Northwest China, and puts forward highly pertinent and preliminary planning standards and methods based on detailed exploration of standard system and land planning of educational facilities of the county.

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**KEYWORDS:** chengcheng of Shaanxi province, educational facilities, county, planning standard and methods, spatial layout.

In China, educational facility construction has become a significant part of the program to build a harmonious society, which is focused on improvement of people's livelihood. Since 55 percent of the agricultural population in China is in rural area, educational facilities don't only serve the urban area any longer with the continuous social and economic development in China. As the county in China is the urban spatial structure unit in most tight and direct contact with the vast rural areas, the collocation of educational facilities shall meet the needs of the county and provide related educational service for the surrounding towns and vast rural areas as well. The county of Chengcheng, located in the center of Shaanxi Province in Northwest China, is representative and typical for the regarding study.

## **1 CURRENT DEVELOPMENT STATUS OF EDUCATIONAL FACILITIES IN CHENGCHENG COUNTY**

### **1.1 Current status of educational facilities in Chengcheng county**

With the increasingly significance people lay on education, imbalance in educational population structure has presented in Chengcheng County. The population of the county seat is 71478 in the year 2008, taking up 16.7% of population of the whole county. Thus the population of students in the county seat should have taken up 17% of that of the whole county. However, students in preliminary and secondary schools in the county seat amount to 25364 in 2008, taking up 38.8% of that of the whole county, and the percentage tends to keep increasing in next several years. Besides, according to relevant national standards, class size for primary school is 45 students, classes in the secondary school shall be within 18-60 with less than 50 students per class in principle. Actually, only three primary schools and one secondary school are in conform to the standard, and most schools are seriously beyond the size requirements (see Table 1).

Accordingly, construction of educational facilities is seriously in short. The average land use per person in primary and secondary schools is only 4.2-10.0 m<sup>2</sup>, among which average land use per student in primary school is 5.0-5.4 m<sup>2</sup>, that in junior high school is 2.74-3.4 m<sup>2</sup>, and that in senior high school is 5.4-5.7 m<sup>2</sup>,

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which is far below 10.5-25.0 m<sup>2</sup>, 12.5-14.5 m<sup>2</sup>, 7.0-8.5 m<sup>2</sup> and 13.5-14.3 m<sup>2</sup> in the residential planning standards.

Since a large school-age population around the county seat has poured in, schools are serious over-manned and educational facilities cannot improved accordingly, which highlighted the issue of “difficulty in admission to school” as a social focus.

**Table 1 the basic indicators for primary and secondary school sites**

School Name	Land area ( m <sup>2</sup> )	building area ( m <sup>2</sup> )	Student Enrollment (person)	Plot ratio	Average space floor for each student (m <sup>2</sup> /person)	Average building area for each student (m <sup>2</sup> /person)
No. One Primary School of Chengguan	17221	11540	3668	0.670	4.70	3.15
No. Three Primary School of Chengguan	11108	7235	2716	0.651	4.09	2.66
No. Three Primary School of Chengguan	13885	4355	559	0.313	23.94	7.79
Experimental School	41333	12000	1200	0.290	34.44	10
Chengcheng Middle School	41384	32739	4987	0.791	8.30	6.56
Chuangxin Middle School	12037	17280	2780	1.435	4.33	11.33
Mineral bureau School	17564	26570	1525	1.512	11.52	6.70
Chengcheng Yucai Middle School, Huaguang school Districts	10775	10223	1070	0.948	10.07	9.55
Middle School in Suburb	22700	9200	2731	0.405	8.31	3.67
Guanzhong Middle School	14765	15693	4128	1.062	3.58	3.80

## 1.2 Courses for lagging-behind educational facility construction

1.2.1 Urban planning doesn't work under market economic conditions: In the past, different management systems have been adopted in urban and rural areas. Urban master planning were mostly instructed and controlled in major districts, lacking integrated consideration, which resulted in short allocation and imbalance in structure of public facilities in urban-rural fringe and rural areas, and causes constraints in educational resources in the county seat when students in rural area poured into the county seat.

1.2.2 Educational facilities aren't implemented effectively: Since the government of Chengcheng County, located in northwest undeveloped area, has utilized the limited capital into projects to improve investment environment and attract external capital investment, there's no more financial resources to address the educational facility construction which is in closely connection to demand of residents. With development of the real estate market, the local government has taken construction of primary and secondary school into market development. Because the planning hasn't put enough monitoring and instruction on the real estate market and related planning management policies are still in need, some educational facilities that should have been furnished have not been implemented.

1.2.3 The special planning of the education sector isn't in good coordination with urban planning: Both the planning and education sectors have made planning on educational facilities for short, mid and long term, but different methods and principles are adopted in the two sectors. In the planning for primary and secondary schools made by the bureau of education, the number of schools in the county seat shall keep unchanged generally. According to the new master planning of the county seat, since the land use will be expanded in large scale in the urban area in next several years, a large population shall be distributed in the expanded area, so the number of primary and secondary schools shall be increased accordingly.

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1.2.4 The planning is in slow response to public policies: Revision of Laws on Compulsory Education has significant effect on educational facility planning. Since many fees are exempted, children from many rural families are able to go to the county seat for better education, while the number and construction scale of schools in the county seat haven't increased accordingly, which causes that students per class keep too much and accommodation conditions in school are at a low level.

## **2 ANALYSIS ON STANDARDS OF EDUCATIONAL FACILITY PLANNING IN THE COUNTY SEAT OF CHENGCHENG**

### **2.1 Modify approaches for student number forecast in planning layout of educational facilities**

Based on analysis of student structure, the planning employs classification-phase approach to forecast the number of students. Classification means classifying the students by source, that is, students from residents in the county seat and students studying in the country seat from villages and towns of the county. Phase means classifying the facility planning of primary and secondary schools of Chengcheng County into two phases: 2008-2015 for short term and 2015-2025 for long term.

2.1.1 Make phased statistics on school-age children in the county based the population data provided by the bureau of statistics as per 7-12 years old for primary school, 13-15 years old for junior high school and 16-18 years old for senior high school: In 2008, the actual student population in primary and junior high schools in the county was more than larger than the population born in the related years. One of the reasons is the population that hasn't been recorded in statistics in the county, and the other is the floating population. There shall be 56878 students in the county as per birth demographics, which is much less than the actual number 63096. The variance is 6218, taking up 9.9% of the total of students. The per thousand index for students in primary school, junior high school and senior high school in the county in 2008 are respectively 58.0 people, 46.0 people and 40.0 people.

As per birth demographics, students in the year 2015 and 2025 will amount to 37143 and 39332 respectively in the county, and the moved-in students will take 10% of the total number of student in the county. Therefore, students in the year 2015 and 2025 will amount to 41000 and 43000 respectively in the county, among which, primary school students amount to 19500 and 22000 respectively, junior high school students amount to 11000 in both 2015 and 2025, and senior high school students amount to 10500 and 10000 respectively. The per thousand index for students in primary school, junior high school and senior high school in the county in 2015 are respectively 42.5 people, 23.5 people and 23.4 people, and that in 2025 are respectively 46.0 people, 22.1 people and 21.4 people.

2.1.2 Carry out classified calculation in forecast of the student number in the county in short term: Classify students into two parts by source. One is primary and secondary school students from residents in the county seat, and the other is students from villages and towns of the county. It is forecasted that the county need provide 13000 seats in primary school and 5500 seats in junior high school in the year 2015 by calculating the thousand indexes of students in the county seat by thousand indexes of students in the county and considering the students into the county seat from villages and towns and students increased from the mechanical expansion of the county. Senior high school education is mostly in the count seat, relatively integrated, and the senior high school students in the country seat take up 64% of the total senior high school students in the county. To forecast the percentage by 75%, the county needs to provide 7700 seats in senior high school. Thus the county shall provide 26200 seats in primary, junior high and senior high school totally.

2.1.3 The education facilities of Chengcheng county seat will face the issues of layout, quantity and quality of schools for long term: According to the master planning of the county seat of Chengcheng, the population of the county seat will reach 0.2 million in 2025, which takes up 45% of that of the whole county that is 0.44million. Thus, facilities of primary and junior high school in the county seat shall necessarily increase on the base of the year 2015. Seats in primary school provided by villages and towns shall keep unchanged from the year 2015, i.e. 6500. The rest shall be provided by the county seat. Then the county shall provide 15500 seats in primary school. Considering that junior high school education is less limited by distance, more students will go to the county seat from villages and towns. If the county seat accepts 60% of junior high school students from villages of towns, the county shall provide 8600 seats in junior high school. Due to increase of promotion rate and being less impacted by population migration, vacancies in senior high school students shall keep unchanged in the year 2025. Calculating by 75% also, the county shall provide 7500 seats in senior high school. Therefore, the county shall provide 31600 seats in diverse schools totally.

## 2.2 Land use shall conform the short- and long-term development trend

Currently, the average land area per pupil in the county sea is in the range 4.1-8.5 m<sup>2</sup>, the average land area per junior high school student is in the range 3.6-10.5 m<sup>2</sup>, and the average land area per senior high school student is in the rang 3.1-8.5 m<sup>2</sup>, which is much less than requirements of Standard for Construction Land Use of Ordinary Primary and Secondary School. Obviously, it is necessary to improve facilities in primary and secondary schools, work out average land area per student, and practice the land use standards for standardized school of diverse type recently. (see Table 2, Table 3and Table 4)

In short term, population of students in primary school, junior high school and senior high school are respectively 13000, 5500 and 7700, and that for long-term are 15000, 8600 and 7500. Taking into consideration that average land use per student in primary school, junior high school and senior high school are respectively 17 m<sup>2</sup>, 18 m<sup>2</sup> and 19 m<sup>2</sup> in new-constructed schools and reconstruction and expansion schools, the relevant land use area for schools is: 221000 m<sup>2</sup>, 93500 m<sup>2</sup> and 138600 m<sup>2</sup> for short term, and 221000 m<sup>2</sup>, 93500 m<sup>2</sup> and 138600 m<sup>2</sup> for long term. In short term, 6 primary schools are needed to construct with 50 students per class and 24 classes per school, 2 junior high schools are needed to construct with 45 students per class and 24 classes per school, and 3.5 senior high schools are needed to construct with 45 students per class and 24 classes per school; in long term, 2 primary schools and 2 junior high schools shall be added on base of the short-term construction while the number of senior high schools keep unchanged.

**Table 2 standards for average land use per student in primary school**

Class Size (Class)	Current School (Average Land Area per Pupil)	Newly-constructed School (Average Land Area per Pupil)	Reconstruction and Expansion School	
			Land Area	(Average Land Area per Pupil)
12	4.3 m <sup>2</sup>	/	/	/
18	23.94 m <sup>2</sup> in max. and 4.7 m <sup>2</sup> in min.	≥20 m <sup>2</sup>	≥12000 m <sup>2</sup>	≥14.8 m <sup>2</sup>
24	34.44 m <sup>2</sup> in max. and 4.1 m <sup>2</sup> in min.	≥20 m <sup>2</sup>	≥13600 m <sup>2</sup>	≥12.6 m <sup>2</sup>
30	/	≥20 m <sup>2</sup>	≥15000 m <sup>2</sup>	≥11 m <sup>2</sup>

**Table 3 Standards for Average Land Use per Student in Junior High School**

Class Size (Class)	Current School (Average Land Area per Pupil)	Newly-constructed School (Average Land Area per Pupil)	Reconstruction and Expansion School	
			Land Area	(Average Land Area per Pupil)
18	4.3 m <sup>2</sup>	≥22 m <sup>2</sup>	≥15000 m <sup>2</sup>	≥16.7 m <sup>2</sup>
24	8.3 m <sup>2</sup> in max. and 4.2 m <sup>2</sup> in min	≥22 m <sup>2</sup>	≥18000 m <sup>2</sup>	≥15 m <sup>2</sup>
30	/	≥22 m <sup>2</sup>	≥22500 m <sup>2</sup>	≥15 m <sup>2</sup>

**Table 4 Standards for Average Land Use per Student in Senior High School**

Class Size (Class)	Current School (Average Land Area per Pupil)	Boarding School	New Non-boarding School	Reconstruction and Expansion School	
				Land Area	(Average Land Area per Pupil)
18	11.6 m <sup>2</sup>	≥23 m <sup>2</sup>	≥20.47 m <sup>2</sup>	≥15000 m <sup>2</sup>	≥16.7 m <sup>2</sup>
24	4.3 m <sup>2</sup>	≥22 m <sup>2</sup>	≥20.47 m <sup>2</sup>	≥18000 m <sup>2</sup>	≥15 m <sup>2</sup>
30	8.3 m <sup>2</sup>	≥22 m <sup>2</sup>	≥20.47 m <sup>2</sup>	≥22500 m <sup>2</sup>	≥15 m <sup>2</sup>

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### 3 CONCLUSION

In China, the urban planning is realizing and shall realize transformation to public policy from technical document sense by transform and innovation. The planning system shall clearly identify the attention that planning of diverse types and levels paid to public and quasi-public benefit service facilities, establish the relationship among them, and make policies to ensure that the facilities of the type shall not be substituted by other profit-making projects.

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