

# **School Facilities and Infrastructure Management System to Comply the National Standar for Education (Case Study in Senior High School 5 of Pematang Siantar)**

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## **ABSTRACT**

The National Standard for Education (also known as SNP) and The National Board of Education Standards (also known BNSP) said that SNP is a minimum criterion about the education system in the entire jurisdiction of the unitary Republic of Indonesia. SNP consist of graduates' competencies standard, content standard, process standard, lecturer and educator standard, facilities and infrastructures standard, management standard, education financing standard, education assessment standard. Based on SNP above, one of the elements that can support the teaching and learning process in schools is the facilities and infrastructure standard. Facilities and infrastructure standards that relate to minimum criteria of learning space, gym, worship place, library, laboratory, workshop, playground, recreation area, as well as other learning resources needed to support the learning process including the use of information technology and communication. The purpose of this study is to find out how school facilities and infrastructure management system to comply SNP. This study is a descriptive qualitative research approach. Based on the data analysis, facilities and infrastructure management system in SMA Negeri 5 Pematang Siantar has been done with the applicable mechanism and use six indicator such as facilities and infrastructure planning, procurement of facilities and infrastructure, inventory of facilities and infrastructure, storage of facilities and infrastructure, maintenance of facilities and infrastructure, elimination of facilities and infrastructure. The Principal has conducted a policy analysis by identification of needs, expert analysis, formulating alternatives, decision making.

**Keywords:** *national standard for education, school facilities and infrastructure management system*

## **1. INTRODUCTION**

The progress of a nation depends on education. Education activities in Indonesia are regulated in the Act of the Republic of Indonesia number 20 of year 2003 about SNP in Chapter one, Article one paragraph-one, which states that "education is a conscious and planned effort to realize the learning atmosphere and learning process so that students are actively able to develop their potential to have religious spiritual strength, self-control, personality, intelligence, noble morality and skills required of themselves, society, nation and country"[14].

The educational activities in chapter one, Article one paragraph-one are further affirmed in chapter XII, Article 45 paragraph-one, which states that "each formal and non-formal educational unit provides facilities and infrastructure that meet educational needs in accordance with the growth and development of physical potential,

social intellectual intelligence, emotional and psychiatric students"[14].

Education is able to produce intelligent people who plan, organize and carry out national development, but only a good education can do that. To achieve a good education needs to be supported by adequate facilities, such as a curriculum that complies with national education standards, the quality of human resources capable of carrying out educational processes as well as supporting facilities and infrastructure in the learning process[12].

Standard may be defined conceptually as a formulation of predetermined parameter of performances or values, which are expected to be achieved. Meanwhile, education may be defined as an activity or a process of developing or improving particular

competence so that the educational goal may be achieved [5,6,].

SNP stipulated in the Act of the Republic of Indonesia number 20 of year 2003 in chapter IX, Article 35 paragraph-one states that "The National Standard for Education consists of content standard, process, graduates' competencies, educator, facilities and infrastructure, management, financing and education assessment that must be improved on a planned and periodic"[1]. The Act. of the Republic of Indonesia number 20 of year 2003 was affirmed by BNSP which states that SNP is "a minimum criteria about the education system in the entire jurisdiction of the unitary Republic of Indonesia. SNP consist of: 1) graduates' competencies standard, 2) content standard, 3) process standard, 4) lecturer and educator standard, 5) facilities and infrastructures standard, 6) management standard, 7) education financing standard, 8) education assessment standard. Based on the National Standard"[1,10].

Based on SNP, one of the elements that can support the learning process of teaching in schools is Facilities and Infrastructures Standard. Facilities and Infrastructures Standard is SNP relating to minimum criteria on study space, place of exercise, place of worship, library, laboratory, workshop, playground, recreation place, and other learning resources needed to support the learning process including the use of information and communication technology. Facilities and Infrastructures Standards are quite important standards because the standard of the educational process can only be done while there are adequate standards of facilities. of the type styles are provided the types of facilities and infrastructures standard for senior high school based on the ministerial regulations number 40 of year 2008 include education units, land, buildings and the completeness of infrastructure and facilities. The provisions on the types of facilities and infrastructure are as follow:[11].

### **2.1. SMA Education Unit Standard**

One of SMA/MA has facilities and infrastructure that can serve a minimum of three study groups and a maximum of 27 study groups.

### **2.2. SMA Land Standards**

Land to build a high school building must meet the minimum ratio of land area to high school students as follows: (1) Many groups study as many as three peoples then the minimum ratio of land area of 36.5 m<sup>2</sup>, (2) Many groups study as many as 4-6 people then the minimum ratio of land area of 35 m<sup>2</sup>, (3) Many groups study as many as 7-9 people then the minimum ratio of land area of 34.8 m<sup>2</sup> , (4) Many groups study as many as 10-12 people then the minimum ratio of land area of 31 m<sup>2</sup>, (5)

Many groups study as many as 13-15 people then the minimum ratio of land area of 28.2 m<sup>2</sup>, (6) Many groups study as many as 16-18 people then the minimum ratio of land area of 26.6 m<sup>2</sup>, (7) Many groups study as many as 19-21 people then the minimum ratio of land area of 25.6 m<sup>2</sup>, (8) Many groups study as many as 22-24 people then the minimum ratio of land area of 25 m<sup>2</sup> , (9) Many groups study as many as 25-27 people then the minimum ratio of land area is 24.4 m<sup>2</sup>[3].

The area of land for high school that has a learning group with many students less than the maximum capacity of the class is as follows: (1) Many groups study as many as three peoples then a minimum area of 2170 m<sup>2</sup>, (2) Many groups study as many as 4-6 people then a minimum area of 3990 m<sup>2</sup>, (3) Many groups study as many as 7-9 people then a minimum area of 6060 m<sup>2</sup>, (4) Many groups study as many as 10-12 people then a minimum area of 6920 m<sup>2</sup> , (5) Many groups study as many as 13-15 people then a minimum area of 7780 m<sup>2</sup>, (6) Many groups study as many as 16-18 people then a minimum area of 8590 m<sup>2</sup>, (7) Many groups study as many as 19-21 people then a minimum area of 9690 m<sup>2</sup>, (8) Many groups study as many as 22-24 people then a minimum area of 10820 m<sup>2</sup>, (9) Many groups study as many as 25-27 people then a minimum area of 11870 m<sup>2</sup>.

The area of land referred to above is the area of land used effectively to build school infrastructure in the form of building buildings and playgrounds/ sports.

Land should be spared potential hazards that threaten health and safety and have access to rescue in case of emergency. If it has a slope, then the average slope should not be more than 15%, not within the borderline of rivers and railways, avoiding water and air pollution and avoiding noise although the various table text styles are provided. The formatter will need to create these components, incorporating the applicable criteria that follow.

The land to build the school must be in accordance with the provisions of the location stipulated in the Regional Regulations on the District/City Spatial Plan, as well as having the status of land rights and /or having a land use permit from the land rights holder in accordance with the provisions of the legislation that applies for a minimum period of 20 years.

### **2.3 SMA Building Standards**

SMA building must meet the minimum ratio of floor area to students as follows: (1) Many groups study as many as three peoples then a minimum ratio of 10.9 m<sup>2</sup>, (2) Many groups study as many as 4-6 people then a minimum ratio of 14.1 m<sup>2</sup>, (3) Many groups study as many as 7-9 people then a minimum ratio of 17.3 m<sup>2</sup>, (4) Many groups study as many as 10-12 people then a minimum ratio of 15.5 m<sup>2</sup> (5) Many groups study as many as 13-15 people then a minimum ratio of 14.1 m<sup>2</sup> ,

(6) Many groups study as many as 16-18 people then a minimum ratio of 13.3 m<sup>2</sup>, (7) Many groups study as many as 19-21 people then a minimum ratio of 12.8 m<sup>2</sup>, (8) Many groups study as many as 22-24 people then a minimum ratio of 12.4 m<sup>2</sup>, (9) Many groups study as many as 25-27 people then a minimum ratio of 12.1 m<sup>2</sup> [12].

**2.4 SMA Facilities and Infrastructure Standards**

The minimum infrastructure that must be in one high school is 18 classrooms, namely classrooms, library rooms, biology laboratory rooms, physics laboratory rooms, chemical laboratory rooms, computer laboratory rooms, language laboratory rooms, principal rooms (head rooms), teacher rooms, administrative rooms, counseling rooms, student organizational rooms, SS rooms, circulation rooms, places of worship, latrines, warehouses and playgrounds/sports[10].

Based on observations that have been made at SMA 5 Pematang Siantar there are still many infrastructures and facilities that have not been realized so that the learning process of teaching is also so disrupted. Small examples such as LCD for teaching learning process, SMA 5 Pematang Siantar only has one pieces while the number of classes there are six classes. Each class does not have an LCD so will have to wait a turn to use it.

Researchers observed and interviewed one of the teachers at the time of teaching who said that their classes took turns using LCD or according to the schedule stipulated by the school. In the table below, you can see the class data and number of public high school students for the 2020/2021 school year as follows:[4].

**Table 1.** Number of students SMA 5 Pematang Siantar of year 2020/2021

No.	Class	Number
1.	X-IPA 1	36
2.	X-IPA 2	36
3.	X-IPA 3	36
4.	X-IPA 4	36
5.	X-IPA 5	36
6.	X-IPS 1	36
7.	X-IPS 2	36
8.	X-IPS 3	36
9.	X-IPS 4	36

10.	X-IPS 5	36
11.	XI-IPA 1	36
12.	XI-IPA 2	36
13.	XI-IPA 3	36
14.	XI-IPA 4	36
15.	XI-IPA 5	36
16.	XI-IPS 1	36
17.	XI-IPS 2	36
18.	XI-IPS 3	36
19.	XI-IPS 4	36
20.	XI-IPS 5	36
21.	XII-IPA 1	36
22.	XII-IPA 2	36
23.	XII-IPA 3	36
24.	XII-IPA 4	36
25.	XII-IPA 5	36
26.	XII-IPS 1	36
27.	XII-IPS 2	36
28.	XII-IPS 3	36
29.	XII-IPS 4	36
30.	XII-IPS 5	36
SUM		1080

If viewed the above data should be SMA Negeri 5 Pematang Siantar already must have at least six LCD pieces that will be placed in each class. Looking at these conditions it can already be believed that the delivery of learning materials is not in accordance with what is expected and it will be difficult to achieve the vision and mission of the school as the table below:[4].

**Table 2.** Vision and Mission of SMA 5 Pematang Siantar

Vision	Mission
Towards a school that excels in	1. Implement learning and guidance effectively

<p>science and technology, excels in sports and arts, and has an environmental perspective based on faith and piety</p>	<ol style="list-style-type: none"> <li>2. Improve the discipline of teachers and students</li> <li>3. Foster skilled and professional art groups</li> <li>4. Foster a reliable sports team</li> <li>5. Establish and foster students for the preparation of the science olympics</li> <li>6. Foster the character and interests of students in extra-curricular activities</li> <li>7. Growing a sense of sincerity and sincerity in all tasks and sincerity in all tasks and responsibilities carried out by school residents</li> <li>8. Seek to preserve environmental functions</li> <li>9. Seek to prevent the occurrence of Environmental pollution</li> <li>10. Seek to prevent environmental damage</li> <li>11. Form students who are noble and have noble character</li> <li>12. Establish harmonious relationship between school residents</li> <li>13. Carry out services and guidances to students to develop according to their potential to be used in their lives</li> </ol>
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The above problems must be addressed by school leaders so that the teaching and learning process can run effectively and efficiently.

## 2. RESEARCH METHODOLOGY

The research used a qualitative research approach using descriptive methods. This study aims to determine school facilities and infrastructure management system to comply the National Standar for Education: case study in Senior High School 5 Pematang Siantar. The location of the study was carried out at SMA 5 Pematang Siantar.

The research limits it self to school facilities and infrastructure management system looking at six main indicators, such as planning indicators, procurement indicators, inventory indicators, storage indicators, maintenance indicators, and indicators for the elimination of educational facilities and infrastructure. The source of the data in this study is the Principal, Affairs of Infrastructure Facilities and Treasurer of Goods.

The research data was obtained using several techniques, such as observation, interviews, and documentations. These three data collection techniques are used to obtain the data needed. The stages of data analysis can be described as follows: (1) Data Collection, (2) Data Reduction, (3) Data Presentation (data display), (4) Conclusion Withdrawal [10].

The technique used to test the validity of the data in this study was carried out in various ways so that the data obtained was more accurate, namely: (1) Triangulation, (2) Member Check.

## 3. RESULTS AND DISCUSSION

### 3.1 Results

**Table 3.** Description of Facilities and Infrastructure (case study in SMA 5 Pematang Siantar) as follows:

A.	<i>School Land:</i>
	<ul style="list-style-type: none"> <li>• Land area of 10,856 m</li> <li>• The ratio of land area to students is 12.77 m</li> <li>• Proof of land ownership in the form of use rights</li> </ul>
B.	<i>Building:</i>
	<ul style="list-style-type: none"> <li>• Floor area of 3,380 m</li> <li>• Ratio of floor area to students 3,17 m</li> <li>• Equipped with an electrical installation with 7,700 m watts of power</li> </ul>
C.	<i>Library Room:</i>
	<ul style="list-style-type: none"> <li>• Library room size of 90 m<sup>2</sup></li> <li>• Library space is easily accessible</li> </ul>
D.	<i>Chemical / Biological Laboratory:</i>
	<ul style="list-style-type: none"> <li>• Laboratory area of 120 m</li> <li>• Laboratory facilities are available cabinets, work desks, letters, lab warehouses</li> <li>• Student microscope 4 pieces</li> </ul>

	<ul style="list-style-type: none"> <li>• 1-piece human heart model</li> <li>• 1 piece human skeleton model</li> <li>• Tonso 1 fruit</li> <li>• Object glass</li> <li>• Test tube 150 x 16 mm</li> <li>• 100 ml 2 pieces of chemical glasses</li> <li>• 250 ml 2 pieces of chemical glasses</li> <li>• Chemical glasses 500 ml 2 pieces</li> <li>• Spritus 5 burners</li> <li>• Burat 50 ml 2 pieces</li> </ul>
<i>E.</i>	<i>Computer Laboratory:</i>
	<ul style="list-style-type: none"> <li>• Laboratory area of 120 m</li> <li>• Laboratory facilities are available cabinets, work desks, letters, lab warehouses</li> </ul>
<i>F.</i>	<i>UKS Room:</i>
	<ul style="list-style-type: none"> <li>• Floor Area 36 m</li> <li>• Means that are available for 2 beds, 1 scale, medicine cabinet + contents, table + chair, dropper, tension, curtain / curtain, shoe rack, sink, height regulator</li> </ul>
<i>G.</i>	<i>Counseling Room:</i>
	<ul style="list-style-type: none"> <li>• Room size 36 m</li> <li>• Facilities available in desk + chair counseling halls</li> </ul>
<i>H.</i>	<i>Student Organization Room:</i>
	<ul style="list-style-type: none"> <li>• Room area 72 m</li> <li>• Facilities available in desk + chair</li> </ul>
<i>I.</i>	<i>Leadership Room:</i>
	<ul style="list-style-type: none"> <li>• Area of leadership 24 m</li> <li>• Facilities for the leadership room are available chairs, school principal desk, table guest chair, cupboard</li> </ul>
<i>J.</i>	<i>Teacher Room:</i>
	<ul style="list-style-type: none"> <li>• Floor area of 75.7 m</li> <li>• Ratio of 1,000m floor area / educator</li> <li>• The teacher's room is equipped with cabinets, tables, chairs, blackboards</li> </ul>
<i>K.</i>	<i>Administration Room:</i>
	<ul style="list-style-type: none"> <li>• Room area of 48 m</li> <li>• Ratio of room area of 6.85 m / officer of 7 people</li> <li>• Facilities available in the administration</li> </ul>

	<ul style="list-style-type: none"> <li>room of tables, chairs, cabinets, computers</li> <li>3 unit, 2 pieces printer, riso machine, 1 set loudspeaker, bell</li> </ul>
<i>L.</i>	<i>Latrine:</i>
	<ul style="list-style-type: none"> <li>• Number of latrines 5 pieces</li> <li>• The floor area of each toilet is 3.24 m</li> <li>• Each toilet has enough water available</li> <li>• Water, dipper, tub facilities are available</li> </ul>
<i>M.</i>	<i>Warehouse Room:</i>
	<ul style="list-style-type: none"> <li>• Floor area of 32 m</li> <li>• The available table + chair</li> </ul>
<i>N.</i>	<i>Place of Worship:</i>
	<ul style="list-style-type: none"> <li>• Floor area of 40 m</li> <li>• Means that are available for water taps, ablution places, block shelves of the place of worship, prayer mat</li> </ul>
<i>O.</i>	<i>Playground / Gym:</i>
	<ul style="list-style-type: none"> <li>• The playground functions as an area of play, exercise, education physical, extra-curricular ceremonies and activities</li> <li>• Extensive play area, exercising 5,670 m</li> <li>• Ratio of play / exercise place 6.57 m / students</li> </ul>
<i>P.</i>	<i>Building Maintenance:</i>
	<ul style="list-style-type: none"> <li>• Make long-term maintenance</li> <li>• Has a 7K program</li> <li>• Implement the 7K program</li> </ul>

### 3.2. Discussion

Based on the description and the six indicators of Facilities and Infrastructure of SMA 5 Pematang Siantar, it can be seen as follows:

#### 3.2.1 Planning of Facilities and Infrastructure:

The results of interviewed with school principals in the principal's office related to facilities and infrastructure planning are "planning is carried out based on the availability of available funds, then needs analysis is carried out, in analyzing infrastructure facilities we accommodate proposals from all education staff and education personnel, then procurement planning is carried out. in the RKAS (School Activity Plan and Budget) every year. In compiling the RKAS we conduct priority scales of facilities and infrastructure that are urgent and in accordance with the available budget".

Subsequent interviews with facilities and infrastructure matters in the teacher's room, he said: "The provision of educational facilities in schools needs to be considered what facilities are needed in the future, how they are procured, the sources of funds, and their utilization. In planning the facilities and infrastructure at this school, I was given the task of infrastructure facilities to participate in planning from the beginning of the school year. The planned facilities and infrastructure are adjusted accordingly the needs submitted by teachers and employees, besides that, they are still based on the amount of funds managed by the school".

### *3.2.2 Procurement of Facilities and Infrastructure:*

The results of interviewed with the main informant, namely the headmaster of SMA 5 Pematang Siantar regarding the procurement of facilities and infrastructure, he said: "in the process of procuring facilities and infrastructure that need to be considered is the needs adjusted to the previous planning list, this procurement must be adjusted to the applicable standards. But not all requirements submitted be met because they are adjusted to the available budget. We must be able to regulate the budget expenditures in schools to fit the needs. The important role in the provision of facilities and infrastructure is that I personally coordinate with the school treasurer".

### *3.2.3 Inventory of Facilities and Infrastructure:*

The results of interviewed with infrastructure facilities as informants said that: "in the inventory we entrust the manager to make an inventory list of all the facilities and infrastructure in the school. Starting from the laboratory room to the classroom in this case the responsible person is the respective homeroom teacher. After that, the treasurer will recap the items on the inventory card (KIB) A, B, D and E".

Subsequent interviews with the treasurer of goods, he said that: "in the inventory I was entrusted to make an inventory list of all the facilities in the school but I as treasurer of goods are also responsible for the inventory provided to all personnel".

### *3.2.4 Storage of Facilities and Infrastructure*

As a result of interviews with facilities and infrastructure affairs, he said: "The process of storing facilities and infrastructure is entrusted to the laboratory manager for laboratory equipment, the library manager for library facilities, so that we avoid the damage process we provide various places so that we can avoid various possibilities that can damage the facility. For example, we provide laboratory space on the front to avoid ignorant hands"

Interviews with laboratory managers relating to the storage of learning facilities and infrastructure said that: "In the storage process I was given full trust from the principal to organize everything related to the storage of facilities in the laboratory, we must be able to arrange the inventory available in the laboratory according to the existing mechanism. Storage of goods is carried out starting from examining the items to be stored, preparing goods based on certain groupings, recording items in the receipt book, goods cards and stock cards and making locations of the items stored so that they can be properly removed".

### *3.2.5 Maintenance of Facilities and Infrastructure*

As a result of interviews with facility and infrastructure maintenance informants, he said that: "maintenance of facilities and infrastructure is given authority to the responsible managers of laboratories, libraries, offices and classrooms. To maintain all available facilities, there must always be periodic checks at least once every 3 months". For example like me "as a laboratory manager I do maintenance by determining the level of damage, meaning that the goods that have suffered severe damage must be prioritized or maintenance and specifically for electronic maintenance periodically maintained.

### *3.2.6 Elimination of Facilities and Infrastructure*

The results of the interviewed with the headmaster said: "in the process of deleting facilities and infrastructure I as the principal is responsible for determining which items should be removed in the inventory list based on information from the facilities and infrastructure affairs as well as being responsible for laboratories, libraries, offices and other space . Facilities and furniture that cannot be used anymore or are not suitable for use are put together in the warehouse within a predetermined period of time".

The interview with the facilities and infrastructure affairs said that: "eliminated facilities and infrastructure if the goods were no longer suitable for use. If the damage can still be repaired, it will be repaired, we determine the period of use of the goods. If the item has been damaged then we propose to the principal to buy it instead".

The Principal also said that: "(1) the Principal before doing the planning had previously identified facilities and infrastructure, (2) In the process of procuring facilities and infrastructure, it is possible for me to conduct expert analysis so that the planning and procurement process is in line with the expectations of all school residents, (3) If the expert analysis process is not smooth I will formulate a qualified alternative, (4) If everything goes smoothly according to the plan, I will make a decision that will be used as a guideline in the teaching and learning process at school".

## 4. CONCLUSIONS AND SUGGESTIONS

### 4.1 Conclusions

Based on the results of research conducted at SMA 5 Pematang Siantar regarding School Facilities and Infrastructure Management System conclusions as follows: (1) Management of facilities and infrastructure at SMA 5 Pematang Siantar has been carried out with the applicable mechanism and uses six indicators, namely: planning of facilities and infrastructure, procurement of facilities and infrastructure, inventory of facilities and infrastructure, storage of facilities and infrastructure, maintenance of facilities and infrastructure, elimination of facilities and infrastructure, (2) The Principal has conducted a policy analysis by doing mechanism and uses six indicators, namely: identification of needs, analysis of experts, formulating alternatives, determination of decisionsorganizational devices that guide the reader through your paper. There are two types: component heads and text heads.

### 4.2 Suggestions

Based on observations, interviews and documentation that have been carried out by the researcher, suggestions are given as input for:

- The Principal needs to fix all facilities and infrastructure at the SMA 5 Pematang Siantar
- School Managers work according to their respective Basic Tasks and Functions

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