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Content Analysis of Geography Subject based on Olimpiade Sains NasionaL (OSN) Insenior High School of Padang City

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Abstract
Education in 21st century emphasizes the way of thinking HOTS (high Order Thinking Skill) to improve individual ability to survive in the face of global competition. HOTS learning is comprehensively tested in OSN (National Science Olympiad). Geography learning that is currently applied in Padang City does not fully have components that support 21st Century Education trends. The objective of this study is to identify material gaps tested in OSN with geography learning material in senior high schools of Padang City. The study was carried out using a descriptive qualitative approach, by analyzing the relationship between Geography syllabus content in OSN and geography learning content which applied in senior high schools of Padang City. The findings after the identification process are used as a basis to develop OSN-based learning supplements. The results of the study show that 29% of the class X geography content tested on OSN has not been included in learning content which has been applied in schools, especially physical geography. Practicum activities that should support cognitive aspects have not been well described in geographic content. Learning supplements have been compiled and focused on physical geography content, especially geomorphology and oceanography. Practicum modules are also to instill HOTS thinking and improve student skills that are useful in the era of intense utilization of geographic information systems. The expertise built through the modules that have been compiled includes mapping capabilities; investigative ability; and the ability to read, analyze, and interpret graphic data.

Keywords: Geography Content, OSN, HOTS

Introduction

The progress of a country in the 4.0 industrial revolution era is closely related to the renewal created by quality resources, so that the world of education must answer the challenges of facing technological advances and the competitive world of work in the era of globalization. These changes are marked by the development of 21st century education skills. The differences between the concept of 20th century education and the concept of 21th century lifelong learning: Curriculum is one of the important differences between the education concepts of 20th and 21th centuries is the curriculums are based on discrete subjects and they are assessed on memorizations of facts with failpass philosophy. But in the 21th century, the curriculum is based on skills and knowledge, the enhancement of self- esteem and the acceptance of lifelong values. (Demirel, 2009). These demands certainly occur in people's lives. As a result of this development our society has gradually changed from industrial society to information society. (Blišťan, Kovanič, & Kovaničová, 2015)
One of the 21st century skills students must possess is high order thinking skills (HOTS). Students are required to have advanced thinking skills so that they can answer the problems that occur around them. Teachers are expected to prepare a learning device, both media and resources. The importance of students' high-order thinking skills make problem-based learning become the suitable method to be applied in all learning subjects (Ruhimat, M; Ningrum, E; Wijayanto, B,

2018). Individuals are expected to have such skills as learning a knowledge-based life, analytical thinking, synthesizing, solving problems, and involving in an effective communication. (Demirel, 2009). Geography learning carried out in Padang City High School is mostly carried out in the 2013 curriculum. However, there are a number of problems, including the lack of references used in learning and practicum implementation so that students are able to implement the knowledge they gain into real form.

The National Science Olympiad 2018 (OSN) was held in Padang City, West Sumatra. Based on the results of the selection of OSN at the provincial level 2018, 85 participants from the geography field were selected. Representatives of Padang City were 2 participants from 6 participants representing West Sumatera. The results of OSN in geography, Padang City won a bronze medal. Overall, West Sumatra won 12 medals. This is a concern to further improve the performance of OSN participants from the City of Padang in the following year.

Based on preliminary observations made to prospective participants in the geography of the national science olympiad, they had difficulty in obtaining OSN geography preparation books. Observations continued by tracing several bookstores in Padang City. The fact shows that the preparation book for geography olympiad is minimal. The aim of the Science Olympiads is to explore and extract talented young people at a very early stage and provide them with resources for developing their skills, potential and capabilities (Can, 2015).

Although changing times have brought with them new conditions to which schools and teachers must adapt, there will always be teachers, students and literature. Bringing them together in the best possible way remains one of the greatest educational challenges facing schools in modern times (Ruubela & Laanemets, 2012). Seeing the importance of supporting books in the preparation of geography in OSN, an analysis is needed to see the suitability of the material in the module in school with the material being tested on the national science olympiad in geography so that it can be known what supplements should be added in learning so that students are ready to follow OSN.

Method

This article writing method is based on literature studies and research results. The data collected is the availability of geographic OSN supporting books, the implementation of geography learning, and the analysis of the relationship of syllabi, modules, and materials tested in OSN in the field of geography. The limitation of writing this article is the linkage of content in class X, so that in the data analysis is explained only class X material. Data collection techniques are carried out with field surveys and literature studies.

Results and Discussion

Results

a. Geographic Content on Class X High School Learning

Table 1. Relationship of Geographic Syllabus with Class X Geography Module

KI	KD	Material
3. understanding, applying, analyzing factual, conceptual, procedural knowledge based on his curiosity about science, technology, art, culture, and humanities with insights on humanity, nationality, state and civilization related to the causes of phenomena and events, and applying procedural knowledge in the field of study the specifics are in accordance with their talents and interests to solve problems	3.1 understand the basic knowledge of geography and its application in everyday life	Introduction to Geography
	3.2 understand the basics of mapping, remote sensing and Geographic Information Systems (GIS)	Mapping, Remote Sensing, and Geographic Information Systems
	3.3 understand the steps of geography research using maps	Geography Science Research Steps
	3.4 analyze the dynamics of planet earth as a space of life	The Dynamics of the Earth as a Space of Life
	3.5 analyze the dynamics of the lithosphere and its impact on life	Lithosphere Dynamics and its impact on life
	3.6 analyze atmospheric dynamics and their impact on life	Atmospheric Dynamics and Its Impact on Life
	3.7 analyze hydrosphere dynamics and their impact on life	Dynamics of Hydrosphere and its impact on life

Source: Results of data analysis (2018)

Based on the table above, it can be seen that there is already a match between the material taught in high school geography learning and the geographic syllabus. Related to the curriculum used, the need to follow dynamic changes to update geography learning content. The development of noticeable dynamics regarding a curriculum design that considers that which is prescribed at national level is a project that needs to undergo a significant curriculum redesign at local level so as to adapt to the characteristics of the context and students who experience it. (Martins, 2012). We live in times where the changes are quick and unpredictable. Change is a constant and that poses a challenge to Geography education (Esteves, 2015).

Geography, as a form of knowledge which helps us in the interpretation of the world, This conception of geography is clearly connected to the idea that learning about social and environmental issues in a critical way helps us to understand the complexity of the world around us. geography is everywhere and allows people to understand the nature and interrelation of different phenomena, ranging from understanding the changes. it is important to mention the basic skills related to the nature of geographical work: location of places or phenomena, relations between places or phenomena and the dynamic interrelation among places and phenomena. (Esteves, 2015).

b. Geography content at the National Science Olympics

The following is a distribution table of the material tested on OSN viewed from the class in high school.

Table 2.

No	Material	Class
1	Meteorology	Class X
2	Oceanography	Class X
3	Disaster Management and Disaster Management	Class XI
4	Resources and resource management	Class XI
5	Environmental Geography and Sustainable Development	Class XI
6	Geomorphology	Class X
7	Agricultural Geography and Food Problems	Class X
8	Population and Population Dynamics	Class XI
9	Economic Geography and Globalization	Class XI
10	Geography of Development and Spatial Theory	Class XII
11	City Geography, Urban Revitalization, and City Planning	Class XII
12	Tourism and Tourism Management	Class XII
13	Geography of Culture and Regional Identity	Class XII

Source: Results of data analysis (2018)

Based on the table above, the contribution of class X material on the questions tested in OSN is 31%, the same as the material in class XII. This shows that class X material which is a concept in geography, has a major contribution to the improvement of students' knowledge in participating in the national science olympiad in geography. Class X material relates to geographic content in the physical field.

c. Linking Geographic Content to High School Learning with OSN

The material tested in the national science olympiad in the field of geography includes content physically, socially, technically, regionally, and environmentally. The following is a table of material availability in class X high school textbooks in Padang City associated with the OSN syllabus:

Table 3.

No	Material	Geography Module Class X
1	Meteorology	94%
2	Oceanography	60%
3	Geomorphology	59%
4	Agricultural Geography and Food Problems	14%

Source: Results of data analysis (2018)

Based on the table above, some content in the material tested on OSN is in the incomplete category. The content in meteorological material is less than 6%, namely the discussion of clouds and hydrometeorites. Oceanographic material, there is no discussion about the nature of sea water and the movement of sea water. Geomorphological material requires complete discussion of 41% relating to karst, eolian, coastal, glacial, underwater landscapes, application of geomorphological understanding, and regional geomorphological features. In the matter of agricultural geography and food problems, only material on land is discussed.

d. OSN-based Geography Learning Design

Class X material taught in geography learning at school covers 71% of class X material tested by OSN. Looking at this percentage, it takes 29% of learning supplements to be 100%. Class X material that needs to be added:

No	Material	Information
1	Application of Geomorphological Understanding	No
2	Regional Geomorphological Appearance	No
3	Karst Landscape	Less complete
4	Eolian Landscape	Less complete
5	Coastal and Delta Landscapes	Less complete
6	Glacial Landscape	Less complete
7	Underwater Landscape	Less complete
8	Sea Water Properties	No
9	Sea Water Movement	No
20	Clouds and Hydrometeorites	Less complete

Source: Results of data analysis (2018)

Based on the table above, it can be seen that the addition of supplements to teaching materials used by teachers is very necessary. These additions are mostly related to physical geography content. The table above is some material that needs to be used in making geography learning supplements in high school.

Practical tests carried out in OSN in the field of geography, namely:

1) Observation Examination, Mapping and Data Collection. This mapping exam aims to test students' ability to map an area. The area mapped is certainly the area of practice that has been set. This mapping is not absolutely necessary to make a basic map, but can also create thematic maps such as land use maps, and others. The skills that students must possess to be able to achieve maximum results in this exam are:
   a) Observation ability
   b) Name / classify observed phenomena / objects
   c) Identify the location of the phenomenon / object on the map
   d) Can use and determine the right geographical symbol
   e) Describe the phenomenon in map legend, as well as the use of a good scale, and clear orientation / direction
2) Spatial Problem Analysis Test. At the practice test location, there are spatial problems (both real and hypothetical) that will be presented to students. The problem / case will be related to physical and / or environmental planning.
3) Examination of Spatial Problems. In this test, students are asked to provide solutions to the problems they have successfully analyzed. The solutions are then poured in the form of a short proposal and also included in the space planning map.

Some of the skills tested in the national science olympiad in the field of geography are the ability to map, investigate, read, analyze, and interpret graphic data. These things are supposed to be integrated in learning in high school, supported by modules as manual procedures for practicum implementation.The skills or skills gained by students from practicum activities greatly contribute to their lives. It is not sufficient for a student to obtain a degree alone as employers are looking for more than just knowledge and technical skills of a degree discipline. They particularly value communication skills. Job applicants who can demonstrate that they have developed these skills will have a real advantage. (Musa, Mufti, Latiff, & Amin, 2012). Productive, active and talented individuals in any country depend largely on their education systems for nation building. All education systems focus on human development (Can, 2015). Only those with the knowledge and skills in dealing with continuous changes and adapting oneself to new situations will be successful. (Ongardwanich, Kanjanawasee, &Tuipae, 2015).

Conclusion

Planting spatial understanding is very important to be done as early as possible, given the changes on the earth are very fast. OSN geography is one of the reasons for carving in assessing individual spatial understanding. Spatial understanding will also develop according to the right content and syllabus. Syllabus as a basic capital in instilling spatial understanding must comprehensively discuss the problem of earth, and must be integrated with the benchmarks used. Geographical content that is not included in an

assessment of 29 percent in the psychomotor domain cannot maximize the spatial understanding of individuals in examining changes on earth. Adjustment and integration of the syllabus is needed as a basis for planting spatial understanding with the material tested in OSN geography.

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