The implementation of energy education will solve the energy problem in the future

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Abstract: Energy relates to human civilization closely, and it is one of the country's fundamentals. It also helps us Taiwan create the world-famous economic miracle. However, energy in the world is limited. In recent years, the unusual phenomenon of global climate is surmised that it might be connected with the activities of the greenhouse effect. Besides, two global oil crises in the past caused the energy shortage problem seriously. As far as people are concerned, energy-related issues must have been valued. The implementation of energy education is one of the strategies to solve the energy problem. Renewable energy education is also one of the keys.

The elementary school teachers must have a correct understanding of renewable energy sources of energy and positive attitude of their competence. Therefore, this study aims at understanding the renewable energy knowledge and attitudes of elementary school teachers in Kaohsiung County.

Keywords: Energy, Renewable energy

1 Preface

Energy is a fundamental industry, economic source of power and transport it with information, transportation, manufacturing, and create so closely related, and with the human civilization is inseparably related to it is also the leading national economic development and improve people's lives an important factor. In the process of economic development, humanity is also a result of the energy assistance will be handled by agricultural and pastoral era, industrial era, business age, and then enter the information age. The more advanced countries or the more civilized society, the higher the degree of reliance on energy. People are also unable to leave the everyday life of energy, once the lack of energy, people will be nowhere to go, nothing to do, without such assistance can, so the energy is also a very important necessity of life.

However, lack of energy will do? The first energy crisis, making Taiwan's economic growth in 1973 to 12.8% Jujiang 1.1% for 1974 for the then-rare two decades of low growth; the second energy crisis has also caused economic growth rate from 1978 to 13.9% reduced in 1980 to 6.6% in 1982 even dropped 3.9%. Therefore, the lack of energy, not simply a problem of itself, but would cause a global recession and so the consequences of the economic growth rate.

Very important but complex issue, in response to low-carbon future temporary new energy era, the world metropolis has been bent on developing renewable energy sources and new energy technologies. How to balance the economy of Taiwan (Economic), environment (Environment), Energy (Energy) and other "3E" level, the development of clean renewable energy, to develop a clear energy policy and make a wise economic investment choices, relationship with Taiwan has not future in sustainable development, The policy Lok really more dependent on a comprehensive energy education.
Primary education is the cornerstone of all education, executive education, teachers are those who, only teachers with a complete understanding of and attitudes, can only take the face of our next generation a glimpse of new energy sources, and by the recognition of intellectual knowledge, towards the action of the Lok real.

investigate elementary school teachers in Kaohsiung County, renewable energy and attitude of the current state of knowledge, and further providing advice to teachers, educational institutions, energy-related units or government authorities as a reference.

2 Literature discussion
2.1 The energy content of
2.1.1 the definition of energy

"Energy" (energy, energy, energy) from the Greek word Energos, its meaning of "active" means (active). (Anything with the inherent ability to perform work). Strictly speaking, energy is defined as "any material innate ability of the implementation of" (Anything with the inherent ability to perform work). (The capacity to do work or the capacity for performing work). To put it simply, the energy which would ordinarily be called "the ability to do work" (The capacity to do work or the capacity for performing work) (Lu Masahito, 1972).

Crystal (1997) in physics point of view, in order to define: energy down the physical processes and objects with all the relevant abstract and calculate the amount of its total amount is always conserved the same, with the symbols E, said unit (J ) joule, energy is one of the most important concepts of physics, energy is a scalar additive, can be converted, but never disappear, energy is sometimes referred to as the ability to do work.

On a wider front, the so-called energy refers to the activity of a system to produce the ability of the outside world, and even food are also part of the scope of energy; but on the narrow definition, the primary energy can be divided into two major categories of energy and secondary energy, which "primary energy "refers to the treatment has not yet been converted, the natural form of energy in such areas as hydro, coal, oil, natural gas, nuclear, solar, biomass energy, wind energy, ocean energy, geothermal energy, etc.; As for the" secondary energy ", refers to the primary energy has been treated, or converted, the form of energy, including: electricity, petrol and gas and so on, while the "primary energy" Ke Yi is endless, but any further subdivided into renewable energy, two kinds of non-renewable energy sources, "renewable energy", with the natural functioning of the perennial, never dried up, including: solar, hydro, biomass, geothermal, wind, ocean energy, while "non-renewable energy" refers to a consumption of nature limited reserves of energy, such as oil, natural gas, coal and nuclear fuel, etc. (Ministry of Economic Affairs Energy Commission, 1985). The definition of energy used in this study is to narrow in terms of the.

2.1.2 the types of energy profile

(A) Solar energy: refers to the sun's radiation or light produced by the energy, it can produce thermal energy or converted directly into electrical energy, and other types of energy (Ministry of Economic Affairs Energy Commission, 1985).

(B) wind: Wind is due to the ground and the atmosphere trap the sun's heat formed by varying degrees of airflow, when the wind flow along the surface, its kinetic energy by the windmill blades to receive, and then turn the machine to generate electricity (National Taiwan Normal University, Industrial Institute of Education, 1992).

(C) hydro power: refers to the water reserves of the potential energy, and hydroelectric power is the use of the use of this water drop, and with the hydro-generator to produce electricity (Chen Xin, 2004). Hydro-electric power have a good energy conversion rates, and extremely low operation and maintenance costs, pollution is also low, the downstream river water can also be adjustable, so hydro-electric power in developing countries account for an important position (Liu 2002).

(D) ocean energy: This refers to the ocean through the use of physical or chemical properties of the energy derived. Including tides, waves, temperature, salt gradient and ocean currents, etc.

(E) Biomass: refers to all those who can foster the use of flora and fauna of energy, while the source of its energy from the sun, in actual use, biomass crops can often refers to waste, fuelwood, livestock waste, urban waste and so on. We can use the bio-conversion technology to convert biomass fuels, such as: alcohol, methane and fossil fuels, so as to facilitate the use (Shaocheng moments, 1987).

(F) geothermal energy: refers to the use of geothermal fluid produced by the energy, while the geothermal fluid means the taking or out of the crust of dry steam, wet steam or hot water, etc. (Ministry of Economic Affairs Energy Commission, 1985).
(G) Oil: Oil is the earth millions of years ago the remains of animals and plants, buried in the seabed, because of the role of bacteria to the gradual decomposition, while the remaining carbon and hydrogen, and converted into hydrocarbons, and then after a long After the effects of high temperature and pressure to produce chemical change, and finally turned into the oil.

(H) Natural gas: Like coal and oil, natural gas is a hydrocarbon, buried underground, it is often accompanied by oil, together with the emergence of the generation process and the oil, natural gas, composed mainly of methane.

(I) Coal: In simple terms, the formation of coal is due to a large number of plant material through the slow decomposition of organic matter and chemical conversion results (Chen Xin, 2004).

(J) Nuclear Energy: Nuclear reactions is divided into two kinds of nuclear fission and nuclear fusion, but fusion of technology today is still unable to grasp the human, so the use of nuclear energy, nuclear fission is the main main (Lu Xian-hai, MAO Jie, 2001).

(K) secondary energy: secondary energy is extracted from the primary energy transformation or energy derived in such areas as from hydro, solar, and coal, etc. are converted into electrical energy, and from solid fuels, liquid fuels and gaseous fuels extracted from the fuel are also classified as a secondary energy in such areas as gas and petrol.

(L) Other New Energy:

1. : fuel cells, fuel cells using hydrogen, methanol, natural gas or biogas as a fuel, does not need to go through the combustion process is to fuel its own direct conversion of chemical energy into electrical energy technology products.

2. Of natural gas hydrates (methane hydrate): Nature in addition to a very small number of gases (such as hydrogen, helium), the vast majority of the gas molecules and water molecules are able to at the appropriate temperature and pressure conditions, combined into a cage-shaped inclusion, called "natural gas-water compounds, "But because the nature found in the" gas water inclusion, "its gas composition mainly of methane, so often referred to as methane hydrate.

2.1.3 the energy emanating from the activities of the environmental issues:

Dependent on the environment of human survival, the relationship between humans and nature are very close, although in our daily life, energy plays a very important role, but the people in the development, transport, storage or use of energy, the process has on the environment pollution, energy, while for people to bring about a comfortable life, but its ecological impact, but it is deserving of our attention (National Taiwan Normal University, Industrial Education Institute, 1992). The impact of energy on the environment include: the greenhouse effect, acid rain, air pollution, water pollution, solid waste and other projects, it is, as described below :

(A) the greenhouse effect:
The greenhouse effect is a normal phenomenon in nature, it makes the Earth's average surface temperature is kept around 15 degrees Celsius, which is a necessary condition for biological survival.

In people breathe in air, the carbon dioxide is not very high, but of great significance. Its role is like a warm greenhouse, a general feature, which allows adoption of solar radiation, while exposure to the surface, but it will be blocked from the surface of the infrared radiation into space, so that heat can accumulate on the Earth, the Earth's surface able to maintain a at a certain temperature, its role as a greenhouse and that a layer of glass, as this effect will be called the "greenhouse effect." In addition to carbon dioxide, the atmosphere inside, like the existence of other gases make the Earth's temperature increase, such as: methane, CFCs, nitrous oxide, ozone and so on, these gases are referred to as "greenhouse gases" (David Hung, 1998; Xu Zhiyi, Tser-Yieth Chen, Zhou Fengying, 2000).

Although the greenhouse effect, created a suitable bio-survival of the planet's climate, but the problem is lies in the since the Industrial Revolution, the burning of fossil fuels, making the atmosphere greatly increased the concentration of greenhouse gases, some scientists believe that high energy use is to make the Earth's surface temperature incremental, leading to the main climate anomalies. In recent years, there is sufficient evidence that the global climate resulted in abnormal phenomena, such as: increased frequency of El Nino occurs, there cold summer or a warm winter, unusual floods or droughts, etc. (David Hung, 1998). Long-term effects of carbon dioxide on the greenhouse holds a 66% influence, and man-made carbon dioxide produced by about 80% is due to the use of fossil fuels caused by the formation so the greenhouse effect and energy use of a great relationship (Chen Ling Yuan, 1995).

The vast majority of scientists have urged that all countries should inhibit or reduce greenhouse gas emissions, so the international community of the United Nations Framework Convention on Climate
Change and the Kyoto Protocol entered into to enable countries to complete the work of reducing greenhouse gases

(B) acid rain:
In general, rainwater pH is lower than the 5.6 that is known as acid rain, which occurs because the burning of coal, oil and other fossil fuels, which produce sulfur oxides and nitrogen oxides released into the atmosphere these substances to the atmosphere, penetrate clouds, after a chemical reaction, and eventually sulfuric acid ions and nitric acid ions, which led to strong acid rain or granular salt decline phenomenon (Chan Kwok-shing, Jiangrui Lake, 2002).

The harm caused by acid rain for us can be roughly divided into four categories: 1. Harm to the vast flora and fauna, destruction of ecological balance. 2. For human health threats. 3. For materials and buildings, and so the damage and erosion. 4. To reduce visibility and affect traffic safety.

(C) Air pollution:
Energy, air pollutants, mainly from a variety of stationary sources (for example: thermal power plants, factories, etc.) or mobile sources (for example: vehicles, motorcycles, etc.); these sources of air pollutants account for a very substantial proportion of all air pollutants, including common of sulfur oxides, nitrogen oxides, carbon monoxide, lead, particulates and volatile organic compounds in addition to, and even toxic substances.

(D) Water Pollution:
Part of the primary energy and secondary energy development, use, or conversion of waste generated by the process are likely to polluted water, temperature and power plant cooling water drainage may also be contaminated, in addition to oil storage tank leaks, or waste storage are may result in groundwater pollution, which are energy activities may cause water pollution (Li Kung-chul, 1996).

(E) Solid Waste:
Energy-related solid waste can be divided into hazardous waste and general waste, the former such as high-level radioactive nuclear waste and sludge plant and from plant air pollution control of solid waste collected. As for the general waste corporations are harmless, but still may lead to the disposal or burial sites, land can not be harder to obtain, or cause visual problems.

2.1.4 energy conservation
Energy-saving measures include the negative and positive two kinds: (a) negative energy conservation refers to the number of directly reduce energy use, but this approach may have a negative impact savings in such areas as less likely to result in low-light lamp, but cause short-sightedness increase, and so. (B) refers to the positive cutting unit of energy use to increase efficiency and productivity, that is, with less energy inputs, but can maintain the same level of economic output

2.2 the energy content of cognitive
2.2.1 a cognitive definition:
American scholar Bloom (1956) from the educational goal of view, to be carved out of the six cognitive levels, (a) knowledge; (b) to understand; (3) application; (4) analysis; (5) integrated; (f) evaluation. GAO Guang-Fu (1988) will be divided into three kinds of human cognitive abilities: (a) the fact that the cognitive (knowing that); (b) and skills (knowing how); (3) specification of the cognitive (knowing to).

2.2.2, the energy content of cognition:
In Indiana (1982) prepared by the energy textbooks, put the energy into awareness, (A) energy profile. (B) energy and life. (C) energy-related matters. (D) energy use. (E) Energy Act.

2.3 The energy content of the attitude
2.3.1 The definition of attitude:
Attitude is generally considered to be mental preparation, or to assess response many have some continuing influence on the apparent trend. Individual pairs of people, events, around the world held by a kind of a lasting and consistent with the tendency of explicit acts by individuals to speculate that tendency.

Attitude is defined as: human, social issues or environmental thoughts, feelings and reaction response to a persistent tendency.

2.3.2 the energy content of the attitude:
Pointed out that the attitude of the so-called energy refers to the current energy use of various methods and types of future development and conservation of energy-related issues hold the view, including a positive attitude and negative energy of the energy attitude.

LaFollette (1980) that the energy approach can be divided into two categories: one category is the right attitude of a variety of fuels, and the other for the right attitude towards energy use, including the first category is further divided into two: the various methods of generating momentum in the degree and related support pollution and waste disposal, the second category refers to the energy conservation. In other words, energy and attitude can be summarized
as (a) methods of generating momentum; (b) pollution and waste disposal; (c) to conserve energy in three areas.

2.4 related research
Researchers collect data on domestic over the years for energy awareness, attitudes related research, from 2000 until 2005, has collected a total of 11, its object of study, including a junior primary school students, junior high school students, high school students, vocational students, primary teachers, junior teachers, vocational teachers, etc., such as in Table 2-1, and addressing the content of this study was to collate relevant sum, the details are as follows:

Table 2-1: Years of energy-related research List of cognition and attitude

<table>
<thead>
<tr>
<th>Researchers</th>
<th>Study</th>
<th>Research topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chen Jianzhou (2001)</td>
<td>Taiwan's public and private senior vocational school teachers</td>
<td>Advanced vocational school teachers, energy awareness, energy attitude and Energy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Study of the relationship between teaching strategies</td>
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<tr>
<td>Zhi Yao (2002)</td>
<td>Taipei County, public and private primary schools and sixth-grade</td>
<td>Primary medium and high grade students understanding of energy and attitude of</td>
</tr>
<tr>
<td></td>
<td>students</td>
<td>the Study of</td>
</tr>
<tr>
<td>Wu Wenxiong (2002)</td>
<td>Four counties in central public sector in the third and sixth grade students</td>
<td>The central region primary school children the knowledge and attitude of Energy</td>
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<td>Research</td>
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<tr>
<td>Yang to accept the letter (2002)</td>
<td>Was founded in Hsinchu County public and private high school students</td>
<td>Hsinchu County middle school students Knowledge and Attitudes of Energy</td>
</tr>
<tr>
<td>Zhou Jin Zhong (2003)</td>
<td>The public and private school teachers in Taipei was founded</td>
<td>Taipei City elementary school teachers in the attitude of Energy Research</td>
</tr>
<tr>
<td>Tu Shigeyoshi</td>
<td>Kaohsiung City State</td>
<td>Kaohsiung City State natural and life</td>
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</table>

(2003) education and teaching status of energy and energy Attitude | natural and life science and technology teachers

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<thead>
<tr>
<th>Lin Rongxian (2003)</th>
<th>Taiwan's public and private senior vocational schools attached to special education teachers in the experimental class</th>
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</thead>
<tbody>
<tr>
<td>Wu Zhang (2004)</td>
<td>Hsinchu City public junior high school students</td>
</tr>
<tr>
<td>Travel light (2004)</td>
<td>Central cities and counties of qualified teachers in public elementary school</td>
</tr>
<tr>
<td>Chih-Jung Chen (2005)</td>
<td>Taipei City was founded in the public and private nature and life technology teachers</td>
</tr>
</tbody>
</table>

3   Study Design and Methodology
3.1 research tools
his study used a questionnaire survey of the manner of, the Department refer to the preparation of the questionnaire preparation of domestic and foreign scholars and researchers of questionnaire interviews, and then ask the domestic ring education, energy-related experts and professors of the views, the amendment made, the questionnaire prepared, after pre-testing and revision subject to complete a formal questionnaire,

(A) Energy Cognitive Scale 
The scale of the Department of researchers and scholars refer to related research questionnaire and asked to be energy-related experts, examines the energy awareness scale, the compile made.
The scale of the Department of researchers and scholars refer to related research questionnaire and asked to be energy-related experts, examines the energy awareness scale, the compile made.

3.2 study
1. Mother groups:
In this study, the current (2010) in Kaohsiung County officially qualified primary school teachers in the study.
2. Sample size:
This study used a questionnaire survey conducted stratified random sampling ratio.

3.3 Data Processing and Analysis Section
In this study, survey after the implementation of the questionnaire carefully examined all recovered to exclude invalid questionnaire data, and then coded the data input into the computer, using statistical software package SPSS 10.0 version for the statistical analysis, the Institute has done the statistical analysis method described as follows:

3.3.1 Descriptive statistics:
(A) The frequency distribution table and expressed as a percentage of elementary school teachers in Kaohsiung County, background information on the distribution of the various data.
(B) The use of frequency allocation table, the average analysis of elementary school teachers in Kaohsiung County of energy awareness, energy, attitude and energy education needs of the current situation.

3.3.2 Inferential statistics:
(A) The independent-samples t test:
This study tested this method, different sex, Kaohsiung County elementary school teachers in the energy awareness, energy, attitude and energy on whether the educational needs of significant differences.
(B) One-way ANOVA analysis:
This study tested this method, different age, educational level, length of service, job, school is located, school size, learning experience, Kaohsiung County, elementary school teachers in the energy awareness, energy, attitude and energy the educational needs of whether there were significant differences, if significant difference, then the method further Scheffe post hoc comparison.
(C) Correlation analysis:
In this study, Pearson product-moment correlation to understand elementary school teachers in Kaohsiung County, in the energy awareness, energy, attitude and energy the educational needs of whether there is significant correlation.

4 Study found that with the expected results of the study
According to literature review found that a lot of energy research, but very little focus on renewable energy. In recent years, due to abnormal climate change, so that the world on global warming and energy conservation and reduce carbon emissions subject of attention. Combined result of energy price cuts led to soaring thereby affecting economic growth, renewable energy and new energy development to become an important issue, so this study focused on renewable energy issues. And because education is the foundation of everything else, if the teacher from the start, thereby affecting students, to teach students the correct instilling the concept of renewable energy resources and knowledge, must be root to start from the bottom up, with the Earth a better environmental efforts.

The purpose of this study are: (a) to explore the study of the cognitive status of renewable energy; (b) to explore the attitude of the study the status of renewable energy; (3) Understanding the different background variables of the study of renewable energy sources whether there are significant differences in cognition ; (4) Understanding the different background variables of the study of renewable energy sources whether there is a significant difference in the attitude of the situation; (7) Understanding the study of renewable energy awareness, the correlation between the attitude. In order to achieve the purpose of this study, first of all based on relevant theoretical basis and relevant research to establish the framework of this study, the preparation of "renewable energy Cognitive Scale", "Renewable Energy Attitude Scale," to Kaohsiung County elementary school teachers as the research object, mining sub - layer of the proportion of random sampling, sent out questionnaires, surveys, and then obtained the data for statistical analysis, setting out the conclusions for teachers and education-related units and follow-up study of the reference

References:


