

COMPARATIVE ANALYSIS OF SCIENCE KNOWLEDGE AND ATTITUDES BETWEEN KOREANS AND AMERICANS – FROM THE SCIENCE CULTURE POINT OF VIEW

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Abstract

This research aimed to analyze the reason of Koreans' relatively lower interest in new scientific discovery and the use of new invention and technology relative to Koreans' higher knowledge on science than that of Americans, to forecast the influence, and to propose solutions for this problem. A scientific technology level of a country is the most sure and accurate indicator that tells the future of the country while weighing the national power. Scientific technology will develop in geometric progression beyond our expectation, and it is ever more emphasized to establish a right point of view toward scientific technology. The worldwide environment pollution, genetic foods, copy of life, nano issue, etc are not only scientific problems but also social problems. Under this situation, it is imperative to have a right understanding on scientific culture. If we call a complex body consisted of shared view toward scientific technology, faith, attitude, and life style of social members, as scientific culture, there will be created right scientific culture in overall society when we try to understand, think highly of such scientific technology and to participate in the creation of scientific technology. In this regard, as a result of forecasting the future through this study, Korea will remain passive in sharing interest or understanding while having a vague hope toward science and technology for the time being. It is thought undesirable given the strong influence of modern scientific technology on all areas of our lives. As shown from the survey results, there appeared serious problems such as low interest and understanding in science, negative attitude toward scientists, and insufficient scientific contents, and this study is meaningful in that it proposed solutions for each problem

Keywords: science culture, analysis, knowledge, attitudes

1. Introduction

To this research, 261 science teachers in 25 high schools in Seoul and 252 middle school students in their 1st grade participated in the survey. The survey comprised the same questions aimed at Americans in 2001 and Koreans in 2004, and only meaningful samples of collected data were selectively researched..

The study results are as follows.

First, as a result of comparing the interest ratio of scientific technology between Koreans and Americans, shown on a research paper of the national understanding on the field of scientific technology (Korea Science Foundation, 2004), less than 10% of American respondents answered 'not interested' in new scientific discovery or the use of new invention and technology, whereas nearly 30% of Korean respondents answered 'not interested'. In this research, Korean adults who became a target of the existing research were divided into science teachers and students. Only 4% of Korean science teachers responded 'not interested' in new scientific discovery, thus, they were proven to show more interest than American respondents. Yet, 12% of Korean science teachers expressed 'not interested' in the use of new invention and technology, which was an unexpected result. 32% of Korean students showed no interest in new scientific discovery, and 28% were indifferent to the use of new invention and technology, which are the similar emotional level of Koreans.

Second, merely 1/3 of American respondents answered 'I do not know very well' to a question on an understanding of new scientific discovery or the use of new invention and technology, whereas 1/2 of Korean respondents answered like that to the question. As a result of asking this question aimed at Korean science teachers and Korean students, 1 out of 10 teachers answered 'I do not know very well' to a question on an understanding of new scientific discovery whereas 2 out of 10 teachers answered as such to a question on the use of new invention and technology. Therefore, in conjunction with the result of the former, the teachers were less interested in the use of new invention and technology than in new scientific discovery, thus, had a lower level of understanding. 60% of students were proven to answer like that to a question on an understanding of new scientific discovery, and 56% of them responded like that to a question on the use of new invention and technology.

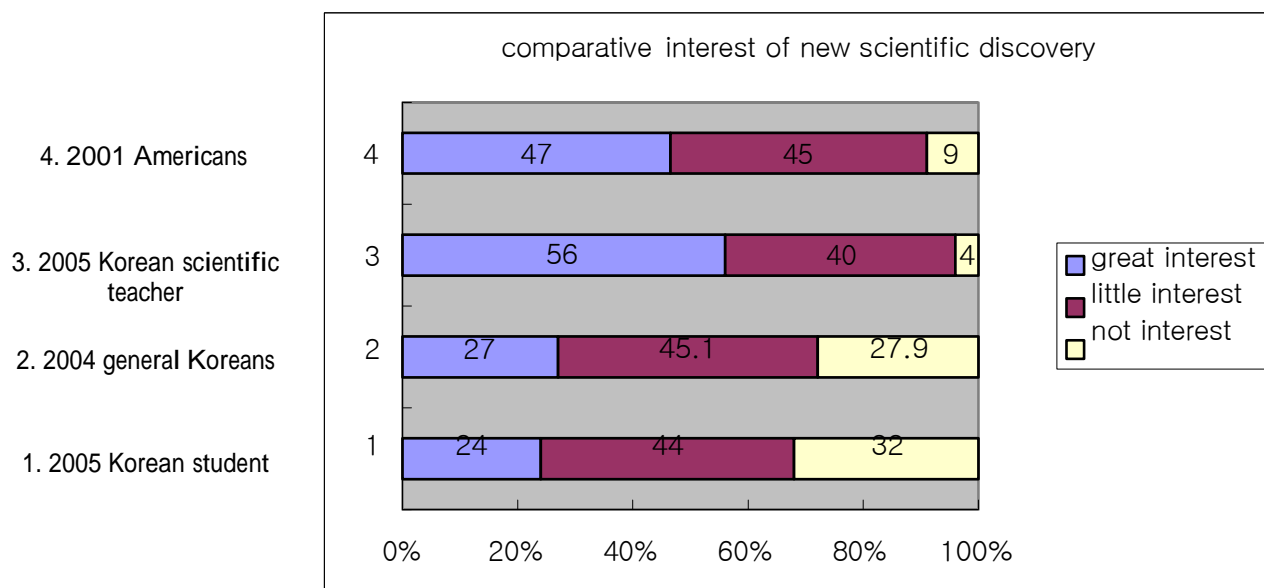
Third, as a result of researching the national understanding on scientific knowledge and research through 17 questions that had respondents guess a right answer, American respondents gave right answers to 6 questions, whereas Korean respondents produced right answers to 11 questions. In this research, Korean science teachers did to 16 questions and Korean students did to 15 questions, which were a higher ratio of giving a right answer. Those 17 questions were easy enough to be solved by middle school students, however, people tend to forget their scientific knowledge as they grow up. And this was reflected to a research on the national understanding. In particular, as a result that reviewing the reason why Korean teachers produced a lower ratio of giving a right answer to a question on ‘an antibiotic kills bacteria and virus.’ than that of American respondents, is probably because the question itself was rather obscure and there was no information related to this question in Korean science education.

Fourth, to a question on ‘science and technology makes our lives healthier, more sound, more convenient, and more pleasant,’ more Korean respondents positively answered than American respondents. However, to a question on ‘most scientists work for enriching the lives of all people’, Korean respondents showed less positive attitude than that of American respondents. In particular, only 4% of Korean students agreed to the question. In addition, to a question on ‘scientists are those who work for the benefit of human beings.’ Korean respondents also demonstrated less positive attitude than that of American respondents, and Korean students assumed the most negative attitude to the question. Such a negative attitude is accurately compared with that of American through a question on ‘what would you feel if your child is going to be a scientist?’ Whereas more or less than 2% of American respondents said ‘unhappy’ to that question, 4% of Korean science teacher, 10% of Korean respondents, and 20% of Korean students said so. Thus, generally Koreans felt more negative than Americans toward becoming a scientist. In particular, the highest ratio shown from Korean students needs to be taken seriously.

Fifth, to questions on ‘working will be more interesting thanks to the application of science and new technology’ and ‘the next generation will be given more opportunities thanks to science and technology’, Koreans and Korean students had a very hopeful view compared with Americans or Korean science teachers. It is concluded that general people do not want to have much interest in science and technology although they have a vague hope toward them in connection with the fourth result. It is a big problem in Korean science society that general Korean people are more likely to abstain themselves from scientific things while depending only on scientist for all scientific things including the risk of science and technology than American people.

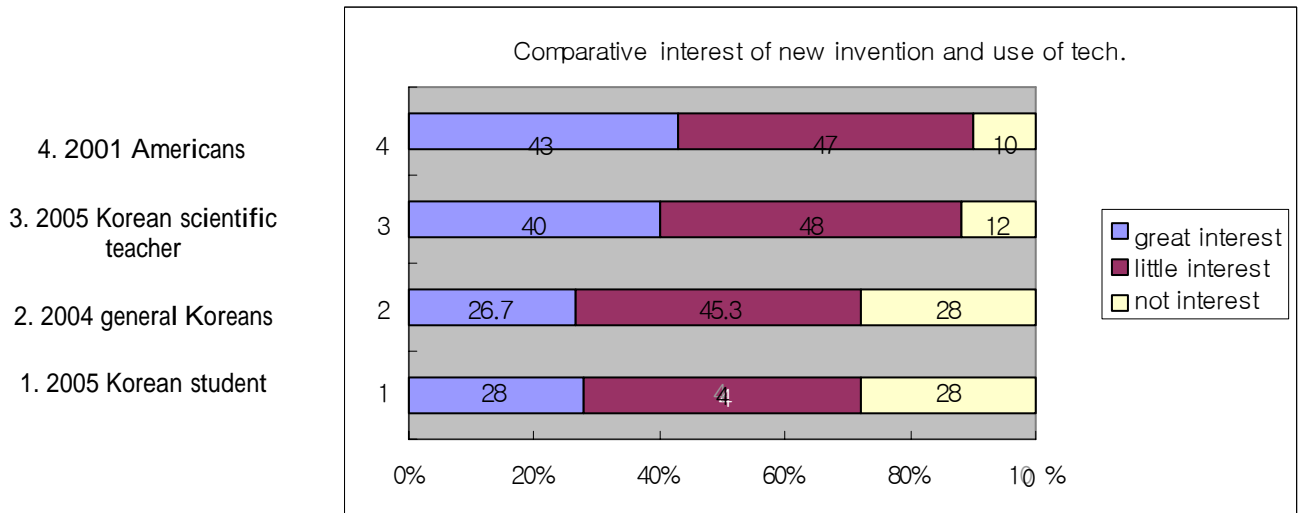
2. The result of Survey

The result of comparing the interest of scientific discovery between Koreans and Americans.



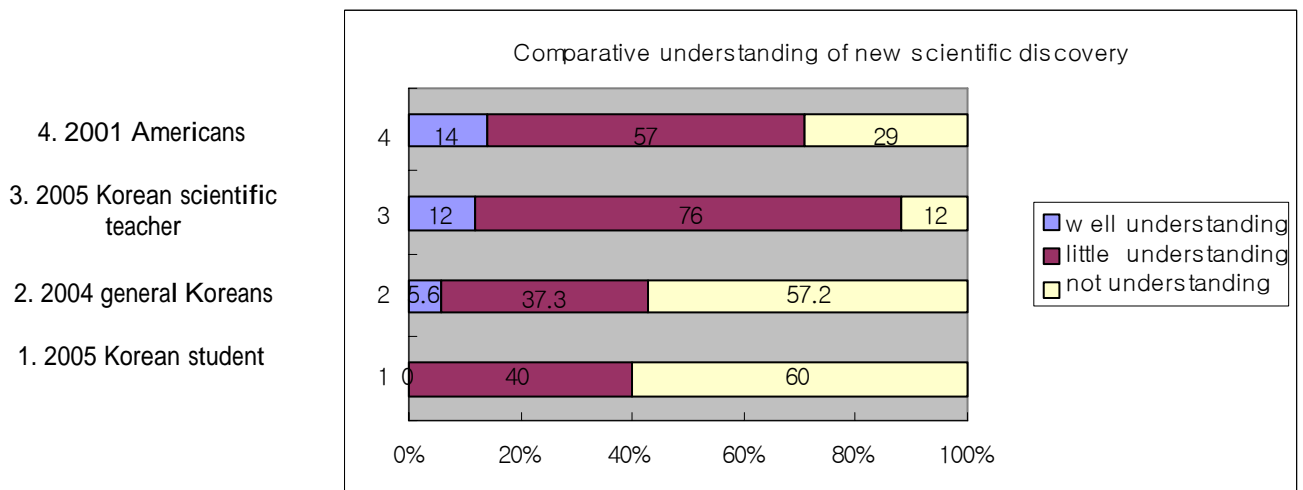
“figure1. comparative interest of new scientific discovery”

The result of comparing the interest of new invention and use of tech. between Koreans and Americans



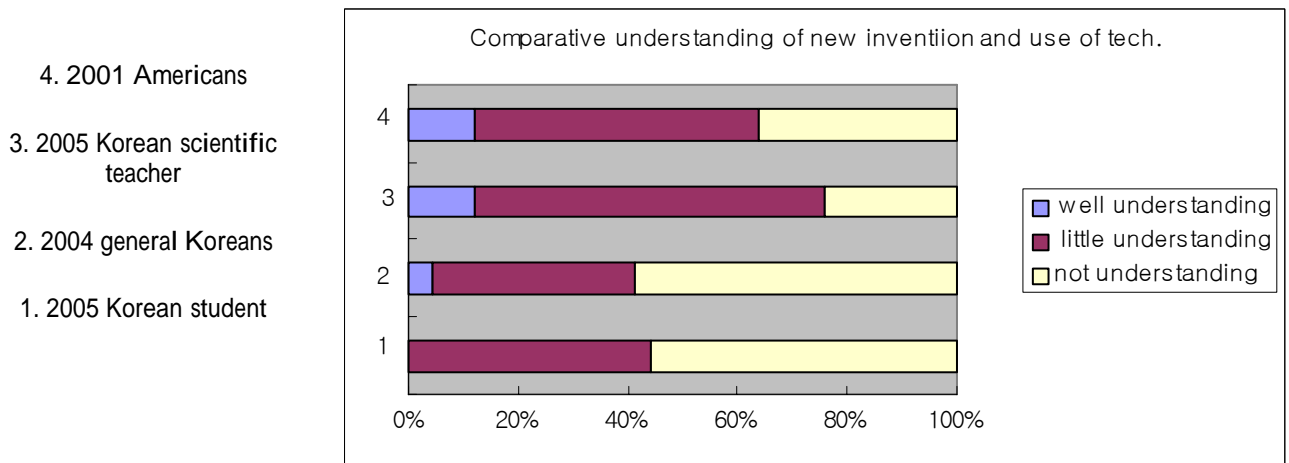
“figure2. comparative interest of new invention and use tech.”

The result of comparing the understanding of scientific discovery between Koreans and Americans



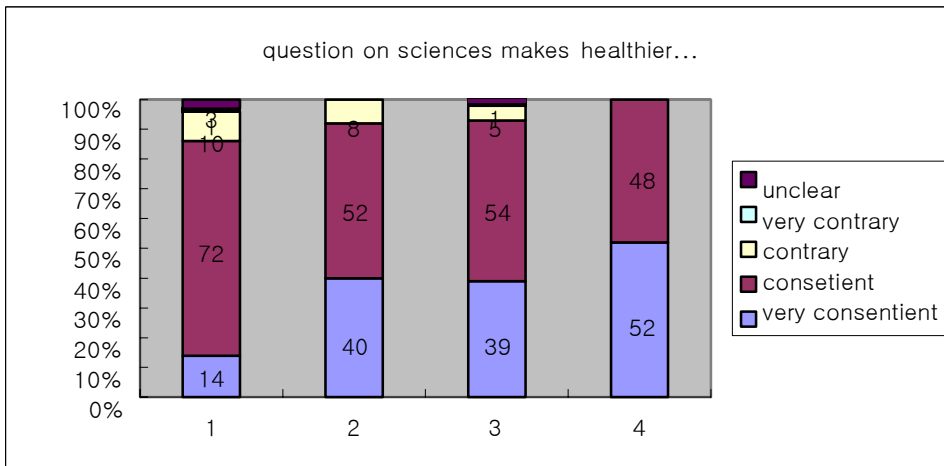
“figure3. comparative understanding of new scientific discovery.”

The result of comparing the understanding of new invention and use of technology



“figure4. comparative understanding of new invention and use of tech.”

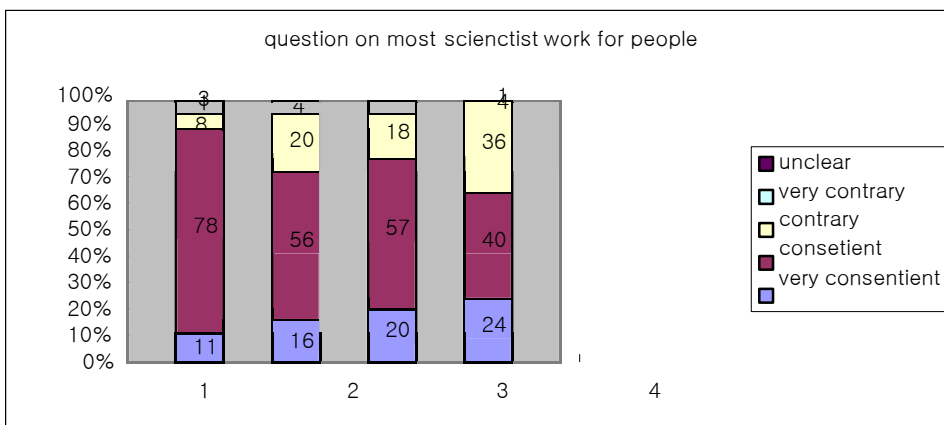
The result of question on 'science and technology makes our lives healthier, more sound, more convenient, and more pleasant'



- 4. 2001 Americans
- 3. 2005 Korean scientific teacher
- 2. 2004 general Koreans
- 1. 2005 Korean student

“figure5. question on ‘science and tech. Makes our lives healthier.....’

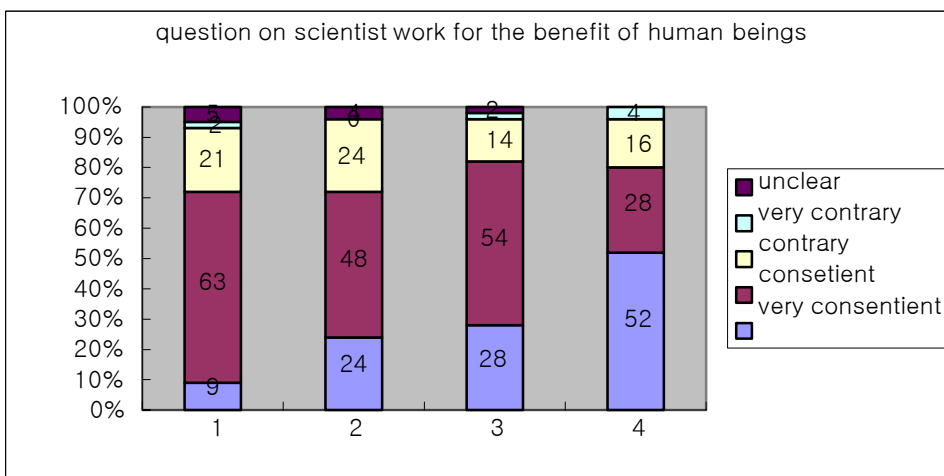
The result of question on 'most scientists work for enriching the lives of all people'



- 4. 2001 Americans
- 3. 2005 Korean scientific teacher
- 2. 2004 general Koreans
- 1.2005 Korean student

“figure6. question on ‘most scientit work for people’

The result of question on 'scientists are those who work for the benefit of human beings'

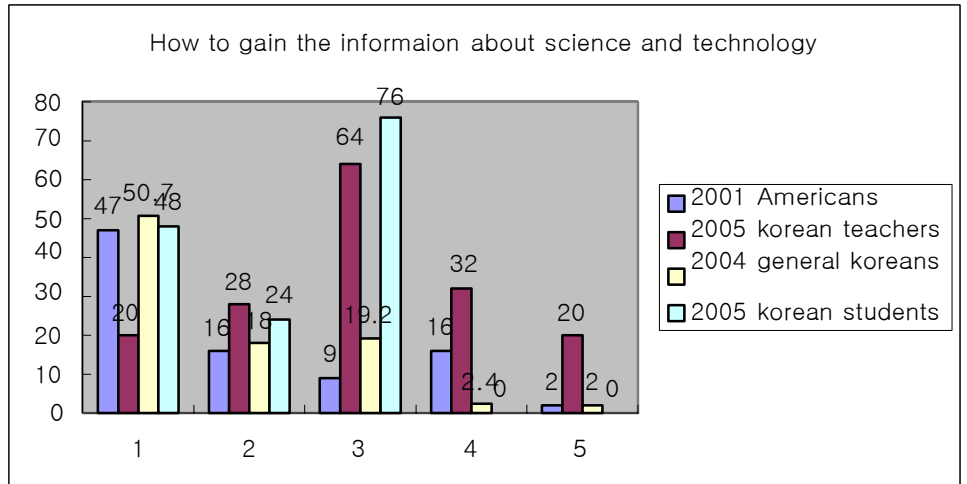


- 4. 2001 Americans
- 3. 2005 Korean scientific teacher
- 2. 2004 general Koreans
- 1.2005 Korean student

“figure7. question on ‘scientist work for the benefit of human beings’

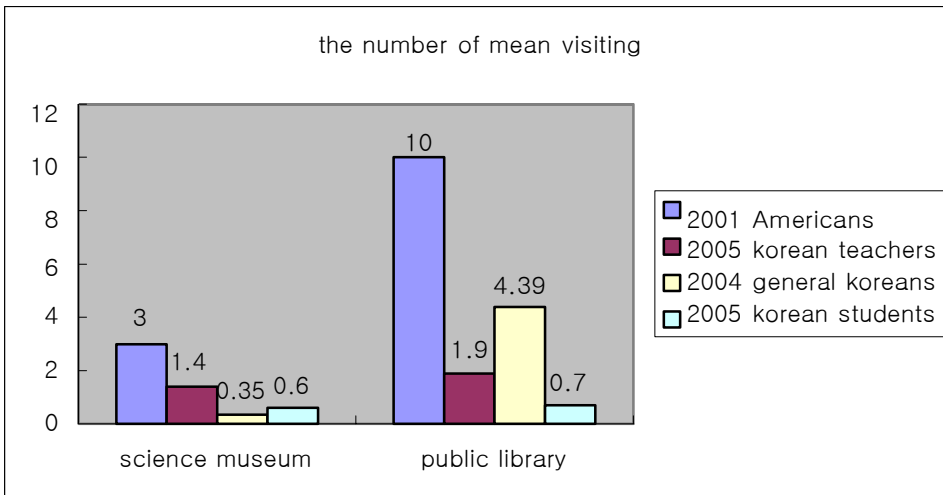
The result of question on 'how to gain information about science and technology'

1. TV/Radion
2. newspaper
3. internet
4. Journals
5. others(books, friends, etc)



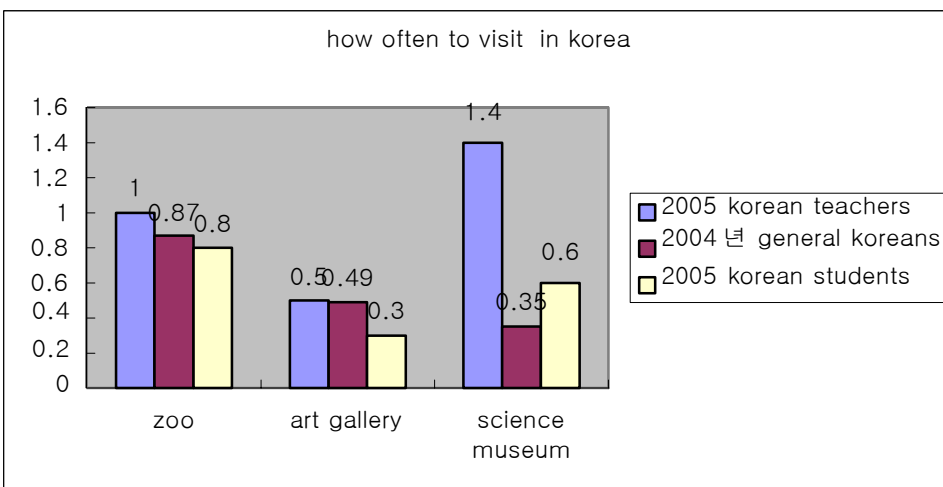
“figure8. question on ‘how to gain information about science and technology’

The result of the number of mean visiting on science museum and public library.



“figure9. question on ‘how often to vисти science museum and public library’

The result of the number of mean visiting on a zoo and an art gallery and science museum in korea



“figure10. question on ‘how often to visit in korea’

3. Conclusion

The worldwide environment pollution, genetic foods, copy of life, nano issue, etc are not only scientific problems but also social problems. Under this situation, it is imperative to have a right understanding on scientific culture. If we call a complex body consisted of shared view toward scientific technology, faith, attitude, and life style of social members, as scientific culture, there will be created right scientific culture in overall society when we try to understand, think highly of such scientific technology and to participate in the creation of scientific technology. In this regard, as a result of forecasting the future through this study, Korea will remain passive in sharing interest or understanding while having a vague hope toward science and technology for the time being. It is thought undesirable given the strong influence of modern scientific technology on all areas of our lives. As shown from the survey results, there appeared serious problems such as low interest and understanding in science, negative attitude toward scientists, and insufficient scientific contents, and this study is meaningful in that it proposed solutions for each problem

References

- [1] Bernstein, B(1970) 'A critique of the concept of compensatory education', in D. Rubenstein and C. Stoneman eds., Education for Democracy, Harmondsworth: Penguin, 1970,p112
- [2] Kleinman, D(2000) Science, Technology, and Democracy, SUNY Press
- [3] Petersen, J.(1984) Citizen Participation in Science Policy, The University of Massachusetts Press.
- [4] Restivo, S(1998) Modern Science as a Social Problem, Social problems, Vol.35, No.3
- [5] Riessman, F(1962) The Culturally Deprived Child, New York : Harper and Row, 1962, p.1
- [6] Winner, L(1993) Social Constructivism : Opening the Black Box and Finding It Empty, Science as Culture, Vol.3, No.16