A Study on Convergence Education of Korean Language, Literature, History, Geography and Science in Steam Education: based on the classics

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Abstract. This paper presented a study on the possibility of converging language education, classical literature, history, geography and science based on the classics. This study also tried to expand the true meaning of ‘art’ in steam education within the subjects of ‘humanities’ and social science. The significance of this paper is as follows. First, it that convergent education of literature and science was made from the ancient times; the origin of it is very long. Second, it found that a lot of scientific knowledge exists in literature, contributing to a deeper understanding of literature. Third, it found that literary creativity and imagination comes from accurate scientific knowledge. Fourth, that the classics offer a lot of convergent knowledge, namely geography, history, science, etc and convergent education helping to solve major problems and issues found in mankind. The real meaning of convergent education of language, literature, geography, history and science based on classics is here.

Keywords: convergence education, holistic education, steam education, classical literature, language, geography, history, science, humanities

1 Introduction

This paper presented a study on the possibility of convergence education relating language, classical literature, history, geography and science. The word ‘science’ is used in language and literature education, but it is mainly used in a scientific or logical sense, not in a scientific manner. This paper focuses on the fact that science is not only related to a scientific way of thinking, but also as course subject in conjunction with the subjects of language, literature, classics, geography, history, etc.

With regard to convergence education, the expression ‘stem education’ has been used a lot. Although, unlike the US and England, recently in Korea, to further stem education there have been many discussions about the possibility of ‘stem’ education which concludes art, not only science, technology, engineering and mathematics (Lim, 2015). In South Korea, stem education was made in earnest since 2011, but has a long way to go (Lee, 2012). However, in the case of Japan, which is located geographically so near to Korea, there was not even a concept of stem education in 2013 (Kim, Ando, 2013).
Teachers in South Korea have recognized steam education as convergence education only on a simple level (Kang, Lee, Kang, 2013). Art is liberal arts, but it tends to focus more on simply superficially music, fine arts, and literature itself. In this paper, I want to expand the true meaning of ‘art’ to ‘humanities’ in steam education. It requires the extension of the recognition and the concept of art in steam education.

It is true that the base of humanities is narrow in steam education because it is from science and engineering disciplines of stem education. In the meantime, research is on steam education, as convergence education has done in the science center or music and fine art center. Therefore it is necessary for more research on how art in steam education should be convergent.

This paper seeks to review the few cases that show how science education could be convergent with humanities and society subjects in the perspectives of humanities scholar by convergence of language, classical literature, history, geography and science. The contents of convergence discussed in this paper are based on the classics. In the classics, this study will explore how science can be convergent with humanities and social subjects. For convenience each chapter is divided, but the base of all the chapters is in classics.

2 Convergence Education of Classical Literature and Science

The oldest type of literature in classical literature is tales literature. Interestingly, similar tales have been found around the world. There are two theories regarding the origin of tales literature, spread theory and self-generated theory. The former relates scientific knowledge. If you take advantage of the knowledge of ‘plate tectonics’ learning in science class, you may have a question since after mankind the continents became separated. In this time, let’s recall another scientific fact, that human beings originate from one person in Africa. Of course, there are many debates, but this is the most powerful opinion (Mellars, Stringer, 1989; Park, 1991). Not only scientifically, also it is true literary. This is because if the origin of human beings is not from one person, it cannot be explained by spread theory. Therefore scientific knowledge plays an important role to understand classical literature and the origins.

In this time, let’s take a look at classical poetry. The poem of Goryeo-era, <Hal-Lim-Byul-Gok> is usually a difficult piece of work for students. There are many Sino Korean words, and the genre is unfamiliar to learners, but, not if it is connected with science. There are many followers in this poem. Especially noted is peony (牡丹) and peony root (芍藥). Among many flowers, related to these two flowers, 6 kinds of names are mentioned, red peony, scarlet peony, white peony, red peony root, scarlet peony root, white peony root. Two flowers are similar, but are named separately in East Asia. The former belongs to a tree, the latter grass.

By these verses, students can be more aware of scientific facts about flowers, and that these flowers have already existed in that time in Korea. In ancient times, Confucius said learning poetry is useful to know many plants’ names, namely biological knowledge. The convergent education of literature and science was made from the ancient times.
3 Convergence Education of Language and Science

Language plays a key role in science education (Cha, Koo, 2015; Lee, 2013), this is an essential prerequisite for learning science concepts (Yang et al, 2011). The following example shows this as well.

Park Jiwon, a scholar of the Joseon dynasty raised question about the expression ‘blue sky’. The Chinese character ‘天’ means heaven and sky, so during the day the sky is blue, but heaven is dark all day long. Heaven is black, so he said ‘天’ should not be always described blue. This is a good example to show that literary creativity and imagination comes from accurate scientific knowledge. In addition, it is helpful to know the exact meaning of vocabulary in order to improvement one’s ability. Through an 18th century scholar we can see the origin of convergence education is long.

One example of hansi is ”As I Send You ($rowrowrow$)” by the great Goryeo-era poet Jeong Jisang (d. 1135). The first line of this poem, “After the rain, the grass along the endless riverbank glistens a deep green (rowrowrowrowrow)’” can be translated into two meanings (Chung, 2014). Namely, “the grass is deep green” and “the color of the grass is plentiful.”; there is a difference. Scientifically, the color of grass is not just one, so “rowrowrow” means “plentiful” in its range of shades. But after it rains, the air is cleaner because of the rain, offering a clearer view, and everything is washed of dust and dirt. Thus, describing the color of the grass as “rowrowrow”. Like this, by thinking of the language of literature scientifically, it is possible to understand poems deeply.

4 Convergence Education of History, Geography and Science

The history book, <Annals of Joseon Dynasty> and the geography book, <Dong-Guk-Yeo-Ji-Seong-Nam(東國輿地勝覽)> have a lot of information. We can find biological knowledge, too. These two classics contain nationwide local products, but are much different that today’s products. This relates with weather change, a very important topic nowadays. The change of plants and seafood of the past and now, could be due to the result of weather change. And this is the history of science, too. The classics offer a lot of convergent knowledge, namely geography, history, science, etc and convergent education helping to solve major problems and issues of mankind.

5 Conclusion

The significance of this paper is as follows. First, it was found that convergent education of literature and science was made from the ancient times; the origin of it is very long. Second, it was found that a lot of scientific knowledge exists in literature, and contributes to a deeper understanding of literature. Third, literary creativity and
imagination comes from accurate scientific knowledge. Fourth, the classics offer a lot of convergent knowledge, namely geography, history, science, etc and convergent education help to solve major problems and issues of mankind. The real meaning of convergent education of language, literature, geography, history and science based on classics is here.

References

9. Yang et al., The Patterns of Interlanguage in Science Learning and the Characteristics of Interlanguage through the Change of Understanding of Science Languages, Korea Association of Science Education, vol. 31, no. 5, pp745-757(2011)