ABSTRACT. In this study, we explored the extent to which Australian, Chinese, and Korean middle school students perceived themselves to have scientific literacy as global citizens and attempted to identify differences and/or commonalities in their perceptions. A total of 655 middle school students (8th and 9th grades; 358 girls and 297 boys) from the three countries participated in the study. We used Global Scientific Literacy Questionnaires (GSLQ) as a survey instrument to assess the students’ perceptions. The GSLQ was developed based on a conceptual framework of Scientific Literacy suggested by Choi, Kim, Mun, Choi, Krajcik & Shin (2011) and Choi, Lee, Shin, Kim & Krajcik (Journal of Research in Science Teaching, 48(6), 670–697, 2011) for citizenship education in the 21st century. The results indicated that most of the students from the three countries showed a tendency toward higher scores for Science as human endeavor; the lowest scores were in Meta-cognition and self-direction. A pattern of gender difference was also examined among the three countries. We suggest future research questions based on a cross-cultural perspective in order to explore the reasons for the existence of these similarities and differences.

KEY WORDS: character and values, citizenship education, cross-cultural, habits of mind, meta-cognition and self-direction, science as human endeavor, scientific literacy

INTRODUCTION

Over the past decades, science education communities throughout the globe have been concerned about what competencies have to be achieved by the twenty-first century populace in order to make decent decisions on daily societal issues, considering the proliferation of scientific, informational, and technological advances. They not only have attempted to identify key knowledge and competencies (e.g. understanding the nature of science, information management skills, communicating and collaborating with others, etc.) but also intended to integrate the knowledge and competencies with their science standards, curriculum, or teaching materials.

Especially, some non-Western countries like Australia, China, and South Korea have actively responded to the global or societal changes even though they present variations in terms of political, sociocultural,
and economical atmospheres. They have initiated educational reforms aiming to raise students as scientifically literate citizens in the contemporary society. For instance, the Australian education community is concerned about the current state of its science education and feels the need to reshape it in response to the societal changes that came with the production of *The Curriculum Framework for Kindergarten to Year 12 Education in Western Australia* (Curriculum Council [Australia], 1998). The framework suggests two key domains of science learning that emphasize the provision of opportunities for students to make responsible decisions, take responsibility for their actions, and communicate within their local, national, and global communities. Tyler (2007) pointed out that “the current scientific literacy perspective on the curriculum is appropriate, but needs to be interpreted through voices representing the range of possible futures for students in using their science, and the implications of these for curriculum knowledge emphases” (p. 63). He called for revamping the science curriculum of Australia in order to take global perspectives and cultivate the scientific understanding and capabilities that citizens need to live in the twenty-first century.

China’s political and cultural background is quite different from that of Australia, but its soaring economy over the past decades has prompted education reforms for the twenty-first century. The traditional goal of science education in China had been simply the transmission of scientific knowledge. Recently, a new goal has replaced the old one: preparing students for a twenty-first century society by enhancing their capabilities for applying knowledge in solving everyday problems (Zhang, Krajcik, Sutherland, Wang, Wu & Qian, 2003). Alongside its efforts to meet societal demands, China has invested in education to nurture students as future citizens who will continue to lead the global economy. The Ministry of Education of the People’s Republic of China (2002) has published documents, such as *Guidelines for Curriculum Reform of Basic Education*, which explicitly mention scientific literacy as a goal of science education and emphasize obtaining inquiry skills and enhancing competency in communication and collaboration for the twenty-first century (Ministry of Education of the People’s Republic of China, 2002). To implement these new goals, Chinese science educators began to explore how to successfully incorporate Science-Technology-Society and scientific inquiry into traditional classrooms to make students more adept at applying knowledge as they consider and handle real-life problems (Zhang & Campbell, 2012). Finally, Chinese science educators also considered understanding the nature of science as one of the essential elements for achieving scientific literacy (Liang & Yuan, 2008; Wei & Thomas, 2005; Zhang et al., 2003).