Chapter 11

The Importance of Reading Literacy in Learning Mathematics

Amalija Žakelj
University of Primorska, Slovenia

Mara Cotič
University of Primorska, Slovenia

Darjo Felda
University of Primorska, Slovenia

Sanela Mešinović
University of Primorska, Slovenia

ABSTRACT

In school, reading literacy is also vital for learning mathematics and development of mathematical literacy. In addition to knowing and understanding numbers, symbols, and relations among them, also large enough vocabulary is needed, and the ability of reading and understanding word problems or mathematical texts. The empirical research is based on the descriptive and causal non-experimental method, with data having been gathered with the support of a test of mathematical knowledge. In the sample, 89 students of the third grade of basic school were involved. The results of the empirical research that examined the relations between the performance of students in mathematics and in Slovenian have shown the students with higher grades in Slovenian have performed better in solving simple and more demanding mathematical problems than the students with lower grades in Slovenian.

INTRODUCTION

Literacy is a cultural value of the individual and of the society, which belongs to the main factors of quality life and creative participation in modern, quickly changing societies. Language is the means of spoken and written communication in a variety of everyday situations that enable the human to establish and maintain social contact.

The national strategy for the development of literacy (Nacionalna Strategija Za Razvoj Pismenosti, 2007, p. 6) defines literacy as a,

permanently developing capacity of individuals to use socially agreed systems of symbols for receiving, understanding, producing, and using texts for their life in the family, at school, at the workplace, and in the society. The acquired knowledge and skills and developed abilities allow the individual successful and creative personal growth and responsible functioning in professional and social life. In addition to the ability of reading, writing, and computing, which today are considered to be the basic abilities of literacy, today also the importance of other abilities (e.g. listening) and new literacies is emphasised such as information, digital, media literacy, and others that are relevant for successful functioning in the society. Literacies as competences and social practice are acquired and developed through entire life in a variety of circumstances and in different areas, pervading all human activities.

Mathematical literacy has paved its way into education through testing mathematical literacy in the framework of PISA, namely as application of mathematics in realistic contexts. It began to appear more frequently as complementary to the concept of reading literacy under the assumption that efficiency of learning depends on learner’s reading strategies. Mathematical literacy is defined in various educational documents, among others also in the Program for International Student Assessment – PISA. Its definition has been permanently evolving. In PISA 2012 (Štraus, Šterman & Štigl, 2013) mathematical literacy is defined,

as an individual’s capacity to formulate, employ, and interpret mathematics in a variety of contexts. It includes reasoning mathematically and using mathematical concepts, procedures, facts, and tools to describe, explain, and predict phenomena. It assists individuals to recognise the role that mathematics plays in the world and to make the well-founded judgments and decisions needed by constructive, engaged and reflective citizens.

In Slovenia and elsewhere in Europe, as well as outside it, reading literacy has been recognised as a fundamental capacity and human value that brings progress, development, freedom, awareness, equality, and democracy. It allows the individual further and lifelong education, competitiveness in the labour market, and orientation into immediate and wider social environment (Nolimal, 2011).

Adequate reading literacy is a necessary condition also for learning mathematics. Studies on links between language and mathematics (Clarkson & Williams, 1994; Dawe, 1983; MacGregor & Price, 1999) indicate the knowledge of the first language and performance in mathematics are interrelated, irrespective of race, nationality, social development, and the language. MacGregor and Price (1999) argue that in addition to the knowledge and understanding of numbers, symbols, and relations among them, also a large enough vocabulary and the ability of reading and understanding word problems are key factors for successful learning of mathematics.
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